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ON DRUG GRINDING.

By Charles V. Hagner, of Philadelphia.

The twenty first volume, No. 1, January, 1849, of the American Journal of Pharmacy, contains an interesting article on the subject of Drug Grinding by Mr. Redwood. It is of peculiar interest to me, and in conversing with different druggists on the subject I have been repeatedly asked to make known some of the results of my experience in that line, and to furnish some views and observations on the article referred to. My experience has at least been of some duration; I have been powdering drugs for this city, man and boy, thirty-nine years, having commenced it in 1812–13. My competitors of that day were John Price, a perfectly dependible and honest man in his business, and an individual named Jack West. They operated with rude horse-power mills, and quite primitive apparatus. They will be remembered by all the old druggists and apothecaries of this city, who will also doubtless remember, that not long after I commenced the business, I succeeded in raising the standard of powders (in point of fineness) equal if not superior to any in this country or in Europe, which standard I was subsequently *forced* to reduce by circumstances which I will state hereafter.

One of my earliest attempts at grinding drugs was on a lot of cream of tartar, some 6000 lbs., for Dr. Haral, an extensive drug-

gist of that day. He showed me the article ground, which was about the fineness of tolerable coarse common table salt, the custom then being to pound it in mortars. He asked me if I could grind it, I told him I thought I could, much finer than the sample, and at a lower rate than he had previously paid, (3 cents per lb.) I procured teams and hauled it to the Falls of Schuylkill, where I resided, and where my father had some mills. Being anxious to try the experiment, I commenced grinding it forthwith, about sun down, on a four feet pair of mill stones. Finding it to grind easily and rapidly, I continued at it until it was finished, about the middle of the night. By nine o'clock next morning I had it on the Doctor's pavement, much to his surprise and astonishment, and still more so when he examined the article and the style of the powder, which was altogether different from anything he had ever before seen. He seemed to think there was some enchantment or magic about it, and would not believe, until he tested it in various ways, that it was his cream of tartar. After some time, however, he became perfectly convinced of the fact, and paid me liberally for the job. This affair soon became known to the other druggists, and I had I believe, all their cream tartar to grind for some six or eight years, when my method of grinding it became known to others, and only within two or three years past adopted in London. From Mr. Redwood's drafts and description of the drug mills in London, and from what I have heard from other sources, they seem to be unacquainted with the use of mill stones in drug grinding.

My success in this affair led me into the business of powdering drugs generally, and I have been at it ever since. I could, I suppose, enumerate some twenty-five or thirty competitors I have had at different times, who have been tempted to go into the business from false and erroneous views of the profits arising from it, which they very soon discover are all fallacious; and they also become acquainted with the fact, that if they are honest in their business—not dealing in drugs—confining themselves entirely to a commission business, that is, powdering for others, as I have as a matter of caution and principle always done, they will, from the limited extent of the business, make little or nothing of it; and if, on the contrary, they are dishonest and fraudulent, they are

sooner or later discovered, and they lose their character and their business. I have in my time seen failures from both these causes.

There is, perhaps, no other business in which there are greater opportunities, more temptations to dishonesty and fraud, and more thanklessness—I may say *punishment*—for being honest, than in this business of powdering drugs. You have not only the temptations and fault-finding on one side to resist, but you have the punishment on the other side. Often have I been censured and frequently made to pay for losses in powdering drugs, which were altogether unavoidable and from no fault of mine, but from the nature and *state* of the article sent to me, which might have been avoided by adopting the plan I have every reason to believe is sometimes pursued elsewhere, of putting some foreign substance in the article to make up a portion of the loss in powdering.

It is perfect nonsense to expect a uniform loss in powdering any particular drug, with but few exceptions; cream tartar, for instance, is one from which there seems to be no evaporation in the process of grinding; on the contrary I have sometimes thought there was an absorption from the atmosphere sufficient in some cases to increase the weight. In this article I rarely lose more than from half to three quarters of one per cent, and most of that arises from extraneous substances—nails, chips, and other things we discover in it and throw out. Mr. Redwood states that the loss in powdering this article in London, is two per cent; from the slow and bungling manner in which they grind it there I only wonder it is not more.

We sometimes receive vegetable substances, roots, barks, gums, &c., direct from the hold of a ship, or from damp cellars; at other times we receive the same articles from the garret of a store, where they may have been for a year or more. It is ridiculous to expect the same loss in both cases. Most of the articles we powder contain more or less water, which we are obliged to dry out, and if we did not dry them artificially, when we reduced them to such minute particles as constitute a fine powder, the water would in a great measure escape by evaporation; this constitutes the loss in powdering drugs, at least the great amount of it. Some time back, I received a large lot of Bayberry bark from a house in this city, who had bought it without sufficient examination, for it had been

completely saturated with water, purposely, I suppose, by some "financier" to increase the weight. When I opened it and saw the condition it was in, I called the attention of the owner to it, but he had unfortunately already paid for it. I dried it, and it lost over thirty-five per cent. in the drying alone. Now what a position would I have been in had I been restricted to a loss of two or three per cent. It would have taken a considerable quantity of what Mr. Redwood facetiously calls "veritable powder of post" (saw-dust) to have made this matter straight.

Twenty years back I attempted to unite to my other operations that of chipping and grinding dye woods, and ground in all from fifteen to twenty tons for different parties; and although the wood appeared to be dry, it lost over two hundred pounds on each ton, caused by evaporation on being cut into fine chips across the grain of the wood. Of course I received the usual amount of "rowing up" for making such losses; so much so that I became heartily sick of the business, and sold out, at half the cost, the apparatus I had erected.

It is customary to remedy this difficulty, not with "powder of post," but "aqua font." Under the pretence that it improves the quality, water is freely used, not only to make good the loss, but a little further, and the consumer is made to pay a pretty high price for water. I have seen barrels of chipped wood that have laid some time in a store, fall short from fifteen to twenty pounds of the marked weight. I think it is a fraudulent and useless custom. If the article is really improved by the operation, (which I very much doubt,) there is plenty of water in every dye-house; let the the consumer water it as much as he chooses, let the dealer sell him wood, not water, and charge accordingly, and let the chipper be a "hewer of wood," but have some compassion on him, and do not also make him a "drawer of water."

The important article of opium comes to us in very different conditions. I believe it is the general custom of the druggists to keep this article in their cellars to prevent its drying and losing weight; some, however, do not, particularly when it is intended to be powdered; of course the loss in the former must necessarily be greater than in the latter instance, and it would be perfectly unreasonable, under such circumstances, to bind the powderer to a regular per centage of loss in powdering opium. I have been in-

formed, and I believe correctly, that there exists in some other places a conventional rule of six per cent. in powdering opium; so far as I remember, I rarely, if ever, powder it at a less loss than eight per cent., and sometimes as great as twenty per cent. I have examined my books in reference to the last 12 lots of opium powdered; and find they amount to 165 lbs. 12 oz. received, and 142 lbs. 2 oz. returned; the least loss eight per cent. and the greatest near twenty per cent., the average being 14 lbs. 5 oz. per cent. Mr. Redwood gives the average loss in powdering this article in London at 14 lbs. 14 oz. on the 112 lbs., the greatest eighteen and the least six per cent.

It would be a very easy matter for any druggist to ascertain the loss in drying any particular lot of opium, by cutting a portion into very small pieces and drying it sufficiently to make a *fine* powder. Yet notwithstanding this simple method of ascertaining the fact, I have met with instances (not many, to be sure, and none lately,) where persons have sent their opium elsewhere to be powdered, for no other reason than that of the loss being less than I made. Perhaps I might have satisfied them had I have made use of the "powder of post," or something else, which is and must be done by every one who powders ordinary opium at a loss of only 6 per cent. This, however, I never have done and never will do. I do not profess more honesty than my neighbors; but if I had no scruples on the subject, I can imagine a case where I might make myself amenable to justice as a participant in causing the death of a fellow being, whose life might be lost for the want of a proper article being administered. I repeat, if there were no other motives, I would not under any circumstances make myself liable to such a charge. Opium is one of the most important of the drugs that pass through my hands. Every physician, druggist and apothecary, knows the importance of having it right, and, so far as it depends on me, it shall be right, be the loss in powdering what it may.

With a conventional loss of 6 per cent. there can be no uniformity in the article. A powderer receives a lot of opium so dry that it only loses 6 per cent. in powdering. He receives another lot that loses 20 per cent. To bring the loss on the latter to the same as the former, he must put in 14 per cent. of adulteration, and then you have one article 14

per cent. less in efficiency than the other. From some cause unknown to me, the consumption of powdered opium has greatly increased in the last five years, and seems to be increasing annually, if I may judge from the quantities I powder.

From what has been said above, it must not by any means be inferred that I have ever been asked by any druggists to adulterate their opium; this has never been the case. The only effect has been very frequent and severe scoldings about the loss; but I have got used to these, and always look for them as a matter of course. Indeed, I have long been satisfied that there are very wrong impressions prevailing on the subject of adulteration of drugs in this city, at least as it regards those kinds that pass through my hands. I have no interest in this matter; my business is to powder all articles sent to me, good, bad or indifferent. I neither buy nor sell drugs—know little or nothing about their cost or value, and whether they be adulterated or not, is of no pecuniary interest to me. I am therefore perfectly disinterested, and under these circumstances assert positively, that for many years past I have not been asked by any druggists to adulterate any of their drugs. I often receive articles to powder that I think are not very good, and often receive mixtures of the same article to powder together. For instance, a druggist may have rhubarb of a dark color and send me some of a lighter color to be mixed and powdered with it. Again, I sometimes receive two or three different kinds of bark to be powdered together—these things are of frequent occurrence—but as to adulterating drugs with a foreign substance, never. I know that there is a considerable amount of suspicion prevailing among certain druggists on this subject. A suspects B, and B suspects A, but as far as my experience goes, I have no hesitation in saying they are all mistaken. Of course I do not know what is done in other establishments, I only allude to my own operations. Some years ago a powdering establishment was in operation here, and failed from one of the causes I alluded to before, which it is easy to comprehend, when I mention that on its being broken up, one of the hands came to me for employment; of course he could do everything—powder this, powder that, and grind t'other—never had any difficulty except in one thing, and that was "grinding cream tartar." I expressed my astonishment at this, knowing it to be the easiest thing in the

whole catalogue of drugs to powder; and on asking him what the difficulty was, he replied, quite innocently, "the alum always stuck the stones fast." Here was the secret; it seems it was the custom of the concern to grind alum with their cream tartar, and I saw in a moment the whole cause of this man's trouble and difficulty. Now I have not the slightest idea that this was ever done by the order or with the knowledge of any respectable druggist of this city. I have frequently heard (and I believe it is notorious) of this being extensively practised elsewhere, but this is the only instance that I ever knew or heard of its being done in this city.

It has frequently struck me as something singular, that in the manufacture of blue mass, I have never, in any instance, been asked or required by any one to make it of less proportion than one-third mercury. I have seen published at different times, here and in New York, analyses of different manufacturers' make, foreign and domestic, greatly falling short of their due proportion of mercury; yet, strange to say, I have been making it for years past—have made tons of it—the druggists send me all the materials to make it of, and in no single instance has it ever come to me in any other proportion than one-third of mercury. Here, again, I have no interest in this matter. It is of no consequence to me, pecuniarily, whether it comes in the proportion of one-third, one-fourth, or one-fifth mercury. I do not deal in the article, and I merely mention this in proof of what I have before stated as to the general correctness of the druggists of this city. Blue mass of my manufacture is in many hands—scattered in every direction—it is no great difficulty to make an analysis of it, and I fearlessly challenge investigation in proof of what I have stated above.

In speaking of the adulteration of drugs, I do not include those that come under the head of "spices." In these, here and everywhere, there is the most vile and abominable system of adulteration prevailing—not with druggists, however. I grind spices for many of them, and am never required to adulterate them, except in one article—ginger. To satisfy some of their customers, they are sometimes obliged to furnish a common and cheaper article of ginger. On these occasions, and they are rare, I grind a portion of corn with it, but it is done openly, always, I believe, with the knowledge of the purchaser, and sold as a common or adulterated article. This is the only exception in spices or anything else

that I am required to adulterate. With but two exceptions, I do not grind for the grocers; they can get their spices ground *cheaper* than I can grind them. Some of the "spice grinders," for instance, will grind a single bag of pepper for nearly what it costs me to send for and return it, and, I believe, make well out at that; perhaps some of them would even pay for the *privilege* of grinding it, if it were not for appearances. They understand all about "powder of post," and the good natured public are made to swallow a great many things they little dream of. Let us accompany one of our worthy epicurean citizens to his dinner and see what he dines on. He has a good beef steak before him, and puts in his plate a yellow substance composed of mustard, turmeric, meal and cayenne pepper. He likes cayenne, and sprinkles over his steak ground dye woods, cake meal, pepper, Venitian red, Spanish brown and the like. Perhaps he takes a fancy also to black pepper; here no one can tell what he gets—anything is good enough to make black pepper, the sweepings of the mill, old damaged rice full of insects, cake meal, (that is flaxseed after the oil is expressed from it,) mustard brand, &c. &c. Then comes the dessert—pies, custards, &c., flavored with cloves, cinnamon, allspice, mace, nutmegs, with all their *accompaniments*, too "numerous to mention;" and finishes his dinner with some beautifully colored strawberry ice cream, in which he sends after the rest a very pretty extract or solution of bugs, (cochineal,) a nauseous little insect, and our worthy friend arises from his table with the comfortable feeling of having made a very good dinner. It must, at least, be admitted, he has had a very considerable variety.

Mustard brand is a favorite article among spice *manufacturers* for adulterating black pepper. It is all very well if it is consumed before a certain time, but let it stand a few months, and then few persons will have the courage to put their noses in the pepper box. It contains a great quantity of oil, which soon becomes rancid; and as offensive as old rancid mustard is, when it is incorporated with pepper it is ten times worse.

In regard to the qualities of drugs that pass through my hands, there was undoubtedly a very great change—I might, perhaps, say, revolution—on the institution of the College of Pharmacy of this city. I remember it well. I was in full operation at the time, and had good opportunities of seeing the effect produced; and

ever since that time the large bulk of the drugs I have to do with are far superior to what they had previously been. The institution of the College of Pharmacy was about the same period of the introduction of quinine into general use. Previous to that time I powdered immense quantities of Peruvian bark—1000 lbs. where I now do 50. The great bulk of it was a miserable spurious article, such as no respectable druggist of this day would touch. I rarely see it now. Nearly all the bark I powder now is of the best qualities; and so with other articles—jalap and rhubarb, for instance—both of which have greatly decreased in the quantity powdered, but improved in the quality.

Every experienced druggist is aware of the fact that the sale of powdered drugs has greatly decreased in this city, in the last fifteen or twenty years. There are several reasons for this; the principal one, perhaps, is that extracts and other preparations have taken the place of powders, but I believe their sale has not decreased in the same proportion in other cities. There is a special reason for this, and that has been the superior fineness of their powders; I allude now to their fineness of division, not their purity. Twenty years back ours were superior to theirs, but, as I stated before, I was *forced* to reduce the standard about fifteen years since, and I will now explain how it came about. For a period of about sixteen years I had pretty much a monopoly of the powdering for this city, and during all that time had a regular list of prices, precisely the same as they existed in New York, and from which I never deviated. My establishment was then, and is now, of sufficient capacity to powder in five months steady work, all the drugs that are required to be powdered in this city in a year, and, with the prices I then received, I could successfully compete with any one, and produce powders equal to any other place in the world. There is no difficulty in reducing powders to any required degree of fineness; the only question with me is, will it pay? About fifteen years since I had some competitors, who in order to obtain business, reduced the prices, at the same time reducing in a much greater ratio the quality or standard of the powders. The druggists insisted on my charging the same as they charged. I resisted as long as I could, but was finally obliged to give up, and the only thing I could do in self-defence was, at the same time to reduce my standard of fineness; and as it appeared to

me the druggists then cared more for cost than quality, all I could do was to accommodate them. It is comparatively an easy matter to reduce drugs to a certain degree of fineness, but to go beyond that is the trouble. The hard work and time employed increases in geometrical progression in proportion to their fineness. If one take a hammer, for instance, and strikes a stone, he breaks it into two pieces—it will take two blows to break it into four—four blows to break it into eight pieces, and so on. The time and labor of reducing a substance to a million of particles is little compared to what is required to reduce that million to twenty millions of particles. It was entirely impossible for me to put this additional labor on an article and receive no more for it than my competitors, who could powder in their way 100 lbs. in the same time and with the same force and power that it took me to powder 10 lbs. This is the whole story, and accounts for the inferior fineness of our powders for some years past. I am now endeavoring to bring up the standard. The druggists are becoming aware of the necessity of doing so, and it remains to be seen whether I shall succeed or not. I suppose the superiority of fine over coarse powders, in the practice of medicine, is universally admitted, and that the same rule that applies to mercury in blue pill, applies also to them; that is, the more minute the particles, the more surface they present for the action of the stomach.

I intended to have noticed in detail Mr. Redwood's article, and have much more to say on the subject; but I feel that I have already taken up too much space, and may perhaps some day resume the subject.

ON EUPATORIUM PERFOLIATUM.

By Weatherill Peterson.

(*An Inaugural Essay.*)

The Eupatorium Perfoliatum of the United States Pharmacopœia, belonging to the seventeenth class, first order of Linnæus, and to the Asteraceæ of Dr. Lindley, is one of the most common of our indigenous syngenesious plants.

It is found throughout almost the whole extent of our country,

and is more generally diffused than any of its numerous congeners. Though not possessed of much external beauty to recommend it to the notice of the casual observer, yet, the manner of its inflorescence and the connate or perfoliate character of its leaves, serve unmistakeably to distinguish it.

In the fresh state, the leaves, especially when rubbed between the fingers, have a peculiar, not disagreeable odor, which is lost to a great extent in the process of desiccation. The flowers, also, when recent, are agreeably aromatic, but in their dried condition they possess little or none of their peculiar aroma.

Though Boneset, like too many of our indigenous remedies, is but seldom called into requisition by the medical practitioner, for the cure of disease, yet, its very general employment in domestic practice, and the reputation which it has acquired in many sections of the country, seem to warrant the assertion, that it is deserving of more confidence than has hitherto been reposed in its virtues by the profession.

The taste of Eupatorium is peculiar, quite bitter and somewhat persistent. It unites the properties of a tonic with those of a diaphoretic, expectorant and emetic, and it has also been supposed to possess anti-intermittent virtues; and, indeed, it has been remarked by a physician of considerable eminence, that "it is not improbable that a principle, similar in properties to quinine, will yet be separated from it." Though I do not coincide in this opinion, yet, I am induced to believe that it contains some principle, *sui generis*, to which its tonic and emetic property is due.

Its peculiar virtues are at present thought to reside in a *bitter extractive*, but this is a sort of *generic term*, too extensively applied to the active principles of plants, and unworthy the name of a distinct principle.

With a view of determining the presence of an active principle, and, if possible, of obtaining it in an isolated form, I instituted a series of experiments, which, although unsuccessful as regards the separation of a principle to which the name *Eupatorin* would be applicable, may yet throw some light upon the proximate constituents of the plant in question.

Expt. 1.—Four ounces (troy) of dried Eupatorium, deprived of stems, were coarsely powdered and subjected to displacement with cold water, until one pint of a reddish brown infusion was ob-

tained: this was removed from the receiving vessel and the process continued until three pints more had passed, when the liquid came through nearly colorless. The liquid last obtained was evaporated to a small bulk, the first pint added and the whole evaporated to the consistence of an extract, which weighed 630 grains, and was reserved for future examination.

As the liquid which came through after the four pints above-mentioned were obtained, although nearly colorless, still possessed much bitterness, I deemed it advisable to continue the process, supposing that the gum, salts, and other matters readily soluble in water, had been dissolved out by the first portions of menstruum, and that the bitter principle now being taken up would be much more free from impurities. About four pints were thus passed through, when the operation was stopped. This was evaporated below 212° to about four fluid ounces, and filtered to separate insoluble extractive: the clear liquid was then reduced to a thick syrupy consistence, and treated with deodorized alcohol; the alcoholic solution was concentrated, treated with animal charcoal, which removed nearly all the color, and submitted to spontaneous evaporation, when a resinous looking matter of a brownish yellow color separated in globules, but ultimately formed a brittle mass amounting to twelve grains, upon the complete evaporation of the liquid. This was slightly soluble in water, to which it communicated a strong bitterness, abundantly soluble in alcohol and soluble also in ether. It was dissolved by caustic potassa.

It was redissolved in alcohol, treated with purified animal charcoal, and the solution again left to spontaneous evaporation, when the same resinous-looking matter was left as before, possessing the peculiar bitter taste of the plant.

Expt. 2.—The four ounces which had been previously nearly exhausted by water, were percolated with alcohol, when an intense green, bitter solution resulted; this was evaporated to a small bulk, decanted, and the matter adhering to the sides of the evaporator, (which seemed to be of a waxy nature,) washed with alcohol and added to it. Officinal acetic acid was now added as long as chlorophylle precipitated, and the liquid filtered; the clear solution was then evaporated, when, as the alcohol was drawn off, a black tasteless resin was deposited in considerable quantity. This resin was soluble in caustic and carbonated alkalies.

After the resin had ceased to precipitate, the clear liquor was decanted, decolorized by purified animal charcoal and evaporated, when a matter similar to that obtained in experiment first remained, but so contaminated with acetate of soda, derived unsuspectingly from the acetic acid used, that it was rejected.

On examining the chlorophylle upon the filter, it was found to contain a white matter; alcohol was added to wash out the chlorophylle, when it remained as a white crystalline powder, insoluble in water, alcohol, ether and liquor potassa, but soluble in nitric acid, producing a yellow color. Exposed to heat upon a plate of glass, it fused and was decomposed, giving off an odor similar to acrolein, and apparently leaving no residue. The amount obtained was quite small.

Expt. 3.—The aqueous extract obtained from four ounces as mentioned in experiment first, was treated with deodorized alcohol, which took up the bitterness and left gum, together with insoluble extractive, coloring matter, chloride of potassium and nitrate of potassa. The resulting tincture was treated with an excess of subacetate of lead, the excess of lead thrown down by sulphuretted hydrogen, and the liquid filtered; the clear solution was evaporated to dryness in a water bath to drive off sulphuretted hydrogen and acetic acid, and then redissolved in a small quantity of alcohol and reduced to a thick syrupy consistence. It was then treated with ether, which took up the bitterness, leaving a dark brown residue, soluble in water and alcohol, and precipitable by subacetate of lead. The ethereal solution was decolorized by purified animal charcoal and left to spontaneous evaporation. The result was a yellowish brown substance, similar to that obtained in experiment first, of a sweet odor, very bitter taste, and on the sides of the evaporating dish presenting the appearance of crystallization. A portion from the sides appeared, under the microscope, studded with numerous minute feathery crystals. A portion exposed to heat on a plate of glass, fused with a slight elevation of temperature, and was ultimately decomposed and burned off, leaving apparently no residue. When inflamed it burned with much smoke, leaving a bulky charcoal.

From these characters it would appear to be a resin, but its slight solubility in water, and also its affording evidences of crystallization, seem to distinguish it from resinous bodies.

Expt. 4.—An infusion in the proportion of an ounce (troy) to the pint when exposed to the air, readily underwent the vinous fermentation, which would seem to indicate the presence of sugar.

With this infusion, sesquichloride of iron gave a dense greenish-black precipitate, while a solution of gelatin gave but a scanty precipitate, showing the presence of but a small proportion of tannin.

Subacetate of lead gave a dense lemon-yellow precipitate, throwing down the coloring matter completely.

Expt. 5.—A decoction of the same strength as the infusion above-mentioned, gave with iodine no evidence of the presence of starch.

Strips of isinglass were macerated in the decoction until all the tannin was removed, and persulphate of iron added with a view of detecting gallic acid: a dark green precipitate resulted, less black than in the former instance, and upon allowing it to settle, the supernatant liquid was of a grass-green color. This proves the absence of gallic acid, as the precipitate and change of color were doubtless produced by the reaction of the iron with the coloring matter of the plant.

Expt. 6. One pound avoirdupois of the dry herb was distilled with four pints of water, until two and a half pints of clear distilled liquid were obtained; this was re-distilled from half a pound more of the herb, when the liquid still came over perfectly transparent, possessing a slight odor of the plant and a slightly bitterish taste. It was saturated with chloride of sodium and allowed to stand, but no milkiness was observed. It therefore contains no volatile oil in the dried condition, unless in exceedingly minute proportion.

From the foregoing experiments, the Eupatorium Perfoliatum appears to contain a peculiar bitter substance analogous to resin, but slightly soluble in water, chlorophylle, resin, a crystalline matter, the nature of which was not determined, gum, tannin, yellow coloring matter, extractive matter, lignin, chloride of potassium, nitrate of potassa, and probably a small portion of sugar and wax.

ON A SUBSTITUTE FOR McMUNN'S ELIXIR OF OPIUM.

By Eugene Dupuy, Pharmaceutist, New York.

Within a few years the use of this preparation of opium has been much extended in the United States, through the medium of the press, as well as from the commendation of a numerous class of our practitioners, who found it to possess a sedative property which the ordinary Tincture of Opium does not possess in a similar way. Yet many amongst them reluctantly made use of it, from the fact that its mode of preparation was kept from the public, and that the usual abuse of such preparations, fostered by *directions for use without need of medical aid*, by mothers, nurses, etc., was a great objection to its employment by that class of practitioners who want to *know, not only* what is the effect of the medicines they administer, but also, what are their component parts, and how they are prepared. Having such men among the physicians honoring my establishment with their custom, I have endeavored to prepare for their use, substitutes for some of the nostrums possessed of some efficacy. As a result of my endeavors, I will state that my substitute for McMunn's Elixir has been tested for about six years, and that it has been found to possess the sedative property peculiar to it, without any of the unpleasant effects attributed to Laudanum.

The late Dr. Smyth Rodgers, formerly Professor in the New York College of Pharmacy, during his painful illness, had frequent recourse to it, and even preferred it to McMunn's preparation, according to his attending physician's statements, although he had, at first, great reluctance to try any thing else. An advantage in my substitute is, that its manipulation is exceedingly simple, and that a country physician having at hand the necessary ingredients, can prepare it as well as the more expert pharmaceutist. I prepare it as follows:

Opium, - - -	℥x.
Water, - - -	q. s.
Alcohol, 95 p. ct. -	℥iv.

The opium is to be made into a thin pulp with water; the mixture allowed to stand in a cool place 48 hours, then transferred

into an elongated glass funnel containing filtering paper; a superstratum of water equivalent to the bulk of the whole mass is added. When 12 ounces of liquid have been filtered, the alcohol is added to the filtered solution.*

About two-thirds of the substance of the opium is contained in the solution. The residue, consisting chiefly in resin, caoutchouc and narcotina, together with the ligneous matter. Consequently, my substitute is nothing more or less than an aqueous solution of opium, nearly free from narcotina, preserved by alcohol.

Various names could be devised for it, but as it is intended to represent an article already used under a popular name, perhaps the appellation of "Elixir of Opium" might be retained for it, if no other be suggested better adapted.

[*Note by the Editor.*—We are glad to receive a communication from New York. Notwithstanding the many able Pharmaceutists in that city, they rarely favor our pages with a contribution.

The unpleasant effects of ordinary tincture of opium when administered to certain patients have long since originated attempts to modify that preparation, witness the *denarcotized* laudanum, Battley's sedative solution, and the preparation suggested by the late Mr. Duhamel, (Amer. Journ. Pharm. vol. xviii. p. 16,) which last is almost identical with the "Elixir" of Mr. Dupuy. The latter, however, has the advantage in more completely exhausting the opium and in being less alcoholic when finished. In common with many others, we have given an occasional thought to the probable mode of preparing the so called "McMunn's Elixir of Opium." It contains meconate of morphia, and hence is prepared with *neutral* solvents, so as not to disturb the natural state of combination in which the morphia exists. In glancing over the long list of the constituents of opium with the view of singling out those to which the unpleasant effects of laudanum may be attributed, perhaps none are more obnoxious to suspicion, than the odorous principle, resin, acid extractive, thebaina, and perhaps codeia and narcotina to some extent, although O'Shaughnessy and others, have shown that it is extremely doubtful whether the latter really possesses any disturbing quality of the kind. By the following process, a solution of opium can be made, deprived almost wholly of the principles it is desirable to avoid, and presenting the morphia in the form of its natural salt:

Take of Opium in powder, ten drachms (troy,)
" Ether,
" Alcohol, each, four fluid ounces,
" Water, a sufficient quantity.

*The proportion of opium is the same as that in Tinct. Opii of the U. S. P.

Macerate the opium in half a pint of water for two days and express; subject the dregs to two successive macerations, using six fluid ounces of water each time, with expression, mix and strain the liquors, evaporate them to two fluid ounces, and agitate the liquid with the ether several times during half an hour. Then separate the ether by means of a funnel, evaporate the solution of opium to dryness, dissolve the extract in half a pint of cold water, pour the solution on a filter, and after it has passed wash the filter with sufficient water to make the filtrate measure 12 fluid ounces, to which add the alcohol and mix.

The same result was arrived at by first digesting the powdered opium in ether at several macerations, until it was exhausted, then drying and exhausting it with water. The aqueous solution was evaporated to dryness and then re-dissolved, filtered, etc., as in the above.

The ethereal liquid was evaporated in each instance:—that obtained directly from the opium yielded a brown crystalline extract, weighing 22 grains; whilst that resulting from washing the solution of opium, afforded acicular crystals and groups of larger crystals in stellated form, with a little brown extract-like matter around the edges, amounting to two grains, and having but little odor, and which exists in the elixir of Mr. Dupuy. These crystals are not reddened in the slightest degree by nitric acid, which dissolves them with a yellow color. In this treatment, the ether removes all that the water has dissolved of the thebaina, the meconin, a part at least of the codeia, the odorous principle, meconate of narcotine, and fatty matter. The ethereal extract obtained directly from the opium, contains nearly the whole of the odorous matter and fatty matter, besides the narcotine, free and combined. The evaporation to dryness. and re-solution in water, removes the ethereal odor, and separates a portion of acid resin and extractive. Landerer, in another part of this number, speaks of the nauseating and other unpleasant effects of the exhalations from poppy plantations during the collection of the opium. May not the odorous principle of opium have something to do with this effect, and may not the removal or loss of this in the so-called *denarcotized laudanum*, and in *old opium pills*, be at least partially the reason of their diminished tendency to produce nausea and head-ache? Mr. Redwood considers the "sedative liquor of Battley," to be an aqueous solution of opium evaporated to dryness to get rid of the acid resin, re-dissolved in water, and a small portion of spirit added to give it permanence.]

ON SOLUTION OF CITRATE OF MAGNESIA.

By William Procter, Jr.

The extensive use now made of Solution of Citrate of Magnesia by physicians, and the favorable reception it has met at the hands of the medicine-taking community, and above all, its adoption in the last edition of the Pharmacopœia, are strong evidences of its real merits as a refrigerant and cathartic. The want of permanence of the solution, as frequently sold, however, has been the cause of disappointment to the patient, and of loss and annoyance to the pharmaceutist.

This change manifests itself by the gradual deposition of a white granular powder, which continues until sometimes the bottles are half filled with the sediment. The object of this paper is to explain the nature of this change, and to point out, if possible, a means of avoiding it.

Citric acid is what chemists call a tribasic acid, that is to say, it combines with *one*, *two*, or *three* equivalents of a base, so as to form three distinct classes of salts. It contains three equivalents of *basic* water besides its water of crystallization, and in uniting with a base to form a salt, this water is partially or wholly displaced by the base, according as one, two or three equivalents of the latter enter into combination. Citric acid contains one equivalent of water of crystallization, if deposited from a hot solution, and two equivalents if from a cold solution, by spontaneous evaporation. The commercial acid is the former, and its formula is $C_{12}\ H_5\ O_{11}$, 3HO+HO. Brande states that citric acid of this constitution does not lose weight or transparency when exposed to a temperature of 212°, but that the acid containing two equivalents of water, by exposure to the same heat, loses all its water of crystallization.

1. One hundred grains of citric acid was dissolved in 700 grains of distilled water, and recently calcined magnesia carefully added to it until neutral to litmus. Thirty grains of magnesia was required. This is in the exact ratio of three equivs. of base to one of acid $3MgO, \overline{Ci}$. This solution, after standing 24 hours, commenced to deposit the white powder before alluded to, which ap-

parently ceased about the fifth day, occupying then about half the height of the bottle. The contents of the bottle were thrown on a filter, washed with water and dried. The dry precipitate weighed 120 grains. The washings, which were neutral, were then evaporated to dryness, and yielded a white residue, weighing 25 grains. Twenty grains of the precipitate, after ignition in a platina crucible, left a residue of 2.88 grains of magnesia.

Twenty grains of the same precipitate were dissolved in half an ounce of water by aid of a sufficient quantity of muriatic acid; ammonia was then carefully added, until the acidity of the solution was neutralized, and afterwards a solution of chloride of calcium was dropped in until it ceased to cause a precipitate. This, when collected, washed, dried and weighed, amounted to fifteen grains of citrate of lime, equivalent to 9.61 grains of citric acid. The precipitate which forms in a neutral solution of citrate of magnesia is therefore composed of $3MgO, \overline{Ci}, +14HO$.

Thirty grains of a deposit in an ordinary bottle of citrate of magnesia, after being washed and dried left, after ignition, 5.8 grs. of magnesia.

Twenty grains of anhydrous magnesia were dissolved in a solution of 100 grains of citric acid in 700 grs. of water, and after standing two weeks, no precipitation occurred.

Twenty-two and-a-half grains of the same magnesia were dissolved in the same bulk of solution of citric acid. At the expiration of a week precipitation commenced, but ceased after it had accumulated to one fifteenth of the bulk of the solution.

The conclusions deduced from these experiments are: 1st, That the neutral salt, $3MgO,\overline{Ci}$, though at first very soluble, has a tendency to assume the crystalline state, and will separate from its solution although it may be mixed with a portion of the acid citrate.

2d, That the salt $2MgO, HO, +\overline{Ci}$, will keep a longer time without precipitating, and in proportion as the quantity of magnesia is increased above two equivalents, the tendency to precipitation increases.

3d. It would also appear, when the process of precipitation is once established in the solution by the separation of the tribasic salt, that under certain circumstances that salt continues to be formed and

precipitated at the expense of the bibasic portion, so as to leave the supernatant liquid more acid than at first. I have noticed this in but few instances, but in one of them, where a dozen bottles of the solution had precipitated largely, the liquid above the precipitate was excessively acid. This change may be accounted for by assuming $2(2MgO\,HO, \overline{Ci})$ to be converted into $3MgO\,\overline{Ci}$ which precipitates, and $MgO, 2HO, \overline{Ci}$, which remains in solution and causes the acidity.

In the formula of the United States Pharmacopœia, the proportion of citric acid to magnesia is nearly that of a neutral salt, there being an excess of about seven grains of the acid, which, added to the seven and a half grains contained in the lemon syrup, gives the acidity to the officinal solution. There is not a sufficient excess of acid in these proportions to keep the solution long from precipitating, and hence the propriety of the revisers in directing the quantities for but one bottle or dose. The presence of the syrup in the solution retards the precipitation of the salt, and unless in winter, it will generally keep a week.

In making enquiries among the apothecaries of this city as to the proportions of magnesia and acid they employ, I find the following:

Propor. in	Neutral Citrate		Acid	100	Magnesia	30
"	"	U. S. Pharm.	"	100	"	29,55
"	of	A	"	100	"	30
"	"	B	"	100	"	29,5
"	"	C	"	100	"	29,3
"	"	D	"	100	"	29,1
"	"	E	"	100	"	25

The last solution, from the statement of the apothecary, keeps very well, which is probably due to its decided acidity.

It is the custom with some pharmaceutists to make a dense solution of citrate of magnesia, pour the necessary quantity with the lemon syrup into the bottle, draw it full of carbonic acid water and immediately cork. Others derive the carbonic acid gas necessary to render the solution effervescent, from *bicarbonate of potassa*, 35 grains of which salt in crystals is added just before the cork is secured. As this salt contains nearly half its weight of carbonic acid, and dissolves much sooner than the carbonate of magnesia, as

ordered in the officinal formula, and moreover, does not affect the transparency of the solution, it has some advantages and merely adds a little citrate of potassa to the solution. The officinal solution contains, theoretically, 21.5 grains, or about 47 cubic inches of carbonic acid gas, while the solution occupies the space of 21 cubic inches.

The process of the pharmacopœia, when the carbonate of magnesia is pure and free from grit, is upon the whole nearly unobjectionable, for making the solution extemporaneously. Whenever the carbonate is impure, the last portion added, leaves a sediment in the solution. It requires, however, more time—at least half an hour being requisite to effect the solution of the last addition of carbonate.

When calcined magnesia is employed with pure citric acid the solution rarely needs filtering, and the small proportion of bicarbonate of potassa, as the source of the carbonic acid, dissolves so soon that a bottle can be prepared for use in a few minutes. The use of calcined magnesia, however, is by no means free from objection. I have recently ascertained that magnesia, having all the external characters of a good preparation, contained 25 per cent. of volatile matter, the larger part of which was water. Here, then, is a source of inequality in the strength and taste of the solution, it being much more acid at one time than another, according to the purity of the magnesia employed.

The quantity of (pure) calcined magnesia, equivalent to five drachms of carbonate is 125 grains, according to Fownes, and 134 grains according to Berzelius; the carbonate I have tried recently, corresponds more nearly with the constitution given by Berzelius than Fownes.

Although an acid solution will keep better than a neutral one, yet there are therapeutical objections to the presence of much acidity in it, which should prevent the apothecary from rendering the preparation permanent at the expense of its usefulness.

REMARKS ON FLUID EXTRACTS OF CINCHONA.

By the Editor.

Whatever may be said in favor of the particular medicinal qualities of Quinia and its salts, and whether or not it really embodies *all* the curative power of the cinchona barks, it remains to be true, that in many cases, a large number of physicians appeal to bark in substance, or in some galenical form, representing its soluble matter. The tinctures, the decoction, and infusion, and the several solid extracts, are called into service, but the former are too dilute and inefficient in ordinary doses, while the latter require to be administered in pilular form, which is not always desirable. It has therefore, been a desideratum to possess a preparation, having the conveniences peculiar to the fluid state, with such concentration as to render the bulk of the dose but moderate.

Mr. Donovan of Dublin, some years since, proposed a preparation (See Vol. xvii., p. 49, Am. Jour. Pharm.) which he called Syrup of Bark, but which required too much trouble and nicety of manipulation, to be generally adopted. He first exhausted eight ounces of calisaya with alcohol and water, evaporated the tincture and decoction separately, each to eight fluid ounces, mixed these, then added 315.31 grs. of dinoxalate of quinia, boiled a few minutes, and lastly dissolved in the liquid, 21 ounces of sugar, and four ounces of gum arabic, so that the whole should measure when complete, 32 fluid ounces.

Since then, Mr. Isaac C. Jones, a graduate of the Philadelphia College of Pharmacy class '49—'50, in his Inaugural Essay, proposed "a fluid extract of cinchona," made by exhausting eight ounces of yellow bark with water acidulated with muriatic acid, by the process of displacement, observing, to limit the quantity of muriatic acid to four fluid drachms, which is mixed with as much water as is necessary to exhaust the bark, viz., about four pints. The acidulated infusion is then evaporated to nine fluid ounces, and while yet hot, fourteen ounces of white sugar is dissolved in it, so that when finished, the whole shall measure a pint. Each fluid drachm or teaspoonful of the syrupy solution, represents half a drachm of bark or about one grain of quinia. This preparation is reddish brown and transparent when hot, but by cool-

ing, deposits cinchonic red, and becomes turbid. All the alkaloids are in solution, however, and by suffering the fluid extract to stand until the cinchonic red is deposited, it may be decanted perfectly transparent. It is exceedingly bitter to the taste.

More recently, Mr. Alfred B. Taylor, Pharmaceutist of this city, has made a fluid extract of calisaya bark, which is, perhaps, preferable to either of the foregoing, inasmuch as it presents the alkaloids in an unaltered condition, and yet fully exhausts the bark. The following is his process :—

Take eight ounces (Troy) of calisaya bark in a uniform coarse powder, moisten it with diluted alcohol, and after standing twelve hours, pack the moist bark properly in a percolator, and pour diluted alcohol on it gradually until four pints of tincture have passed, or until its bitterness is exhausted. Evaporate the tincture in a water bath (or a still) to nine fluid ounces, then add fourteen ounces (Troy) of sugar, continue the heat until it is dissolved and strain, whilst hot, if necessary.

This preparation like the preceding, is transparent, and dark reddish brown coloured whilst hot, but on cooling it becomes turbid to a greater degree, owing to the separation of the cincho-tannates of the bark alkalies. For the reason that a part of these are in an insoluble form, this fluid extract is less bitter and disagreeable than that made with acidulated water. It has the same theoretical strength, a teaspoonful being an ordinary dose, and it affords a very eligible means to the physician, of prescribing bark either alone or in combination with other agents, without the delay necessary to make an infusion.

Dr. John F. Meigs, who has used the fluid extract made by Mr. Taylor's formula, speaks favourably of its advantages.

ON THE SYRUPS OF TOLU AND GINGER.

By John D. Finley.

(*Extracted from an Inaugural Essay on Syrups.*)

Syrup of Tolu.—As this syrup is prepared in the present Pharmacopœia [Edit. 1840] it is in the form of a mixture; in the New Pharmacopœia it will be prepared from an aromatized sugar,

obtained by adding the tincture to sugar, allowing the alcohol to evaporate, and making it into syrup the usual way. As thus prepared it shows a slight milkiness. A better plan is the following, by which a syrup may readily be made of double the strength of that of the Pharmacopœia, and perfectly clear.

Take of Tincture of Tolu, two fluid ounces,
Carbonate of Magnesia, two drachms,
Sugar, a pound and a half, (Avoirdupois.)
Water, twelve fluid ounces.

Rub the tincture of tolu with the carbonate of magnesia and two ounces of the sugar, in powder, gradually add the water, and filter. The remainder of the sugar is then dissolved in the filtered liquid by means of a gentle heat.

Syrup of Ginger.—A stronger and more perfect syrup can be prepared by making a *ginger water* by the process directed above for syrup of Tolu, and dissolving the sugar in it with a gentle heat.

[We have tried Mr. Finley's processes as given above, and find them to produce syrups agreeably aromatic, especially in the instance of ginger. An accidental advantage of the use of magnesia in the preparation of syrup of tolu, is the saturation of the benzoic and cinnamic acids:—on the other hand, one seventh of the menstruum is alcohol, which, in a great measure remains in the syrup, and gives it an alcoholic flavor. If this was removed without injury to the aroma, the formula would be unexceptionable. In the ginger syrup the proportion of alcohol is less, and its presence is hardly perceptible. The aromatic taste of this syrup, derived from the volatile oil, is perfect, but the pungency which depends on the soft resin, is less marked than in the officinal syrup, although sufficiently so to render it, very agreeable, especially for mineral water purposes.—Editor.]

ON THE CHEMICAL AND PHYSIOLOGICAL PROPERTIES OF CHLORINATED CHLOROHYDRIC ETHER.

By M. Mialhe & M. Flourens.

Dr. Aran having requested us to place at his disposal the different volatile agents, to which anæsthetic qualities had been attributed, with the intention of studying, with more care than had hitherto been given to the subject, their sedative action, we

presented to him, at two different periods, liquids obtained by the reaction of chlorine upon bi-carburetted hydrogen, furnished to us under the name of Dutch liquid, by two of the most renowned manufacturing chemists of Paris. The first of these liquids, according to Dr. Aran, gave very satisfactory clinical results, which he feels it his duty to make known. With the second specimen he was not successful. During our researches into the cause of this difference, we found the last mentioned liquid possessing the characteristics of Dutch liquid, simply, while the former presented more analogy with liquid chloride of carbon, than with Dutch liquor, properly so called, showing a higher density, a higher boiling point, and being entirely non-inflammable.

In pursuing our comparative researches, we became convinced that the liquid was not chloride of carbon, but Dutch liquid, which had lost a certain quantity of hydrogen, and acquired an equivalent proportion of chlorine, *i. e.* chlorinated Dutch liquid.

It is therefore certain, that the happy therapeutic results, recently reported by Dr. Aran, should be attributed to *chlorinated* Dutch liquid, and not to that liquid in its ordinary chemical condition. But the price of this substance being too high to allow of its advantageous introduction into therapeutics, we have proposed to substitute for it, an analogous ethereal compound, proceeding from the action of chlorine upon chlorohydric ether.

It appears, from the able researches of M. V. Regnault, that chlorine, acting upon chlorohydric ether, takes from it hydrogen, forming chlorohydric acid, substituting itself in the place of the hydrogen, and giving birth to a series of compounds, more and more rich in chlorine, and which are all isomeric with the corresponding terms of the bi-carburetted hydrogen series.

The isomerism is complete, for not only is the elementary composition the same, but the densities of the vapors are identical. The order of molecular arrangement alone is different, thus clearly defining its chemical reactions.

We now concluded that these two etheriform series, were endowed with the same therapeutic virtues, and therefore, that chlorinated Dutch liquid could be replaced in clinical practice by the corresponding chlorinated chlorohydric ether. This new compound, tested practically by Dr. Aran, among his patients, has completely confirmed our conjecture; being found possessed of the same thera-

peutic properties as the chlorinated Dutch liquid. It is colorless, very fluid, having an aromatic ethereal odor, analagous to that of chloroform, but more resembling that of Dutch liquid; a sweet and stimulating taste; is completely without action upon litmus paper; with difficulty soluble in water, though perfectly and readily dissolving in alcohol, sulphuric ether and most of the fixed and volatile oils. It is not inflammable as are the officinal ethers and Dutch liquid; bearing resemblance in this point to chloroform. Its specific gravity not being uniform, and its boiling point varying with the density, from 110° to 130° centigrade, clearly indicate that this body is not an unique substance, but is constituted of several others of different densities and elastic tension.*

Inasmuch as the different chlorinated chlorohydric ethers all possess the same anæsthetic properties, and it would be a matter of impossibility completely to separate them, we propose to designate the liquid which they form by the generic name of *chlorinated chlorohydric ether.*

Such are the principal properties of this new anæsthetic liquid, which we think, with Dr. Aran, is called to play an important part among local sedatives.—*L'Abeille Medicale,* Jan. 28, 1851.

Flourens on Chlorinated Hydrochloric Ether.—A new substance has been proposed by chemists, as possessing in a very high degree the power of suspending the sensibility of the tissues in animals submitted to its influence. M. Flourens (on the 20th instant) informed the Academy of Sciences of Paris, of some experiments he has lately made, with the view of studying the effects of chlorinated hydrochloric ether upon animals. The learned physiologist has subjected several dogs to the inhalation of this ether (prepared by M. Ed. Robin,) and all of them were affected with general anæsthesia, some in from three to four minutes, and others in four

* The reaction of chlorine upon chlorohydric ether, gives rise to four ethers, viz.: the mono-, bi-, tri- and quadrichlorinated; the mono- and bichlorinated being the first obtained and the easiest to prepare, but too volatile to be advantageously employed as local anæsthetics. Treated with an excess of chlorine, they are converted into the tri- and quadrichlorinated ethers, which are much more dense and less volatile. The two last mentioned compounds, constitute more particularly, the chlorinated chlorohydric ether.—*Annales de Chem. et de Phys.* lxxi. 353.

or five. The sciatic nerve, which, in some of the cases, was laid bare, was found to have lost all sensibility, but to retain its motive power. Not one of the dogs died.

M. Flourens then tried the effect of injecting it into the arteries. He threw into the right crural artery of several dogs from 2 to 21.2 grammes (say 40 grains to 400) of chlorinated hydrochloric ether.

At the moment of injection the animal gave a cry of pain. There succeeded sudden paralysis of the posterior extremity; the sciatic nerve, laid bare, still retained its sensibility, but had lost all motive power. Chlorinated hydrochloric ether has, therefore, whether inhaled or injected, the same action as chloroform. This, injected into the arteries, immediately produces paralysis of the muscles, with tetanic rigidity; as also do the volatile oils of turpentine, mint, rosemary, fennel, &c. On the contrary, the ordinary ethers, the fixed oils, oil of olives, oil of naphtha, sulphuric acid, ammonia, and camphor, produce muscular paralysis, with relaxation of the fibres.

Moreover, these experiments appear to separate muscular from nervous action; for, on the one hand, tetanic rigidity exhibits itself even when the motivity of the nerve is not lost; and, on the contrary, muscular relaxation occurs while the motivity of the nerve remains. There is thus a visible independence in the action of the nerve, and that of the muscle.—*Med. News and Library*, Jan. 1858, and *Institute*, Feb. 8th, 1851.

THE SUMBUL OR JATAMANSI.

[The characters of sumbul or musk-root, as given in the following remarks, accord very well with a specimen of the root in the Cabinet of the Philadelphia College of Pharmacy.—EDITOR.]

The *sumbul*, of the character and therapeutic virtues of which French physicians know as yet very little, appears to have been employed in India from quite a remote period. Pietro Della Valle, who travelled in 1623, 1624 and 1625, through different portions of Asia, mentions it, to say that the *sumbul* is a root and

not a stalk; although the word *sumbul* is applied in India, it appears, to a plant and to portions of a plant, employed as a perfume, formerly as an incense in religious ceremonies, and also as a medicine. W. Jones has asserted the true *sumbul* to be a species of valerian, known equally well among the Hindoos and Brahmins by the name of *jatamansi*. According to M. Granville, however, it is rather a plant of the family umbelliferæ, an aquatic plant, or living upon the margin of streams.

It has been, by mistake, stated that the *sumbul* grows in Hindostan. It is not found in any portion of the Indian territory occupied by the English.

It appears that it grows in Bootan and the mountains of Nepaul, and that although immense quantities of the dried plant are exported, no botanist has yet been enabled to describe the characters of a living specimen. A law of the country, it is said, prohibits the export of the living plant without the special authorization of the sovereign.

The *sumbul* does not present itself, as has been generally stated, in the form of a mass of leaves and roots of a greenish color, crumpled and pressed together. This error arose from the fact of a sample of this substance shown at St. Petersburg, having been previously mixed with a strong decoction of this same substance, which is of a greenish color. On the contrary, it appears as a thick, homogeneous root of two, three, or even four inches in diameter, cut into fragments of an inch or an inch and a half long, the section of which shows a fibrous texture and a yellowish white color. It is brought from the centre of Asia to Moscow, by way of Kiatka.

In all good samples of sumbul, the external envelope or epidermis, is found of a sombre or light brown color; a greater depth of color, indicating greater age in the specimen whence derived.

This epidermis is very thin and strongly wrinkled. The inner substance is composed of coarse fibres, irregular and easily separated one from another, after having detached, the outer envelope, indicating a porous structure, resembling that of aquatic plants. If, after the removal of the epidermis an oblique or transverse section is made, an external layer white and veined is perceived, and an inner layer, thicker and of a yellowish hue. With the aid of a

powerful lens, small transparent points, having the appearance of granules of fecula can be perceived.

Two remarkable physical characteristics attract the attention during the examination of this root. In the first place its perfume, which can hardly be distinguished from the purest musk, and secondly, the powerful odor which it exhales when chewed. This musk-like odor is so marked, that some have even supposed the *sumbul* to have derived this quality from its contact with musk itself, during its progress from Asia to Europe, but such an idea falls to the ground before the facts that the *sumbul* retains this perfume, even when very old, that even when the outer portions are removed the interior is still strongly odorous; that the odor-giving principle itself can be isolated by chemical manipulation, and its very name, as given by botanists, is an argument of some weight. It is called *mochus-wurzel* or *musk-root*.

The aromatic taste is a no less distinctive characteristic. The first impression received upon tasting it is a slightly sweetish flavor, followed rapidly by a balsamic taste, and succeeded by a not unpleasant bitterness. As the mastication proceeds, there is felt in the mouth and fauces, a very marked aroma, accompanied by a sensation of warmth, the penetrating odor of this substance being imparted to the breath. These effects are much more evident, if in place of the root the alcoholic tincture is tasted, in which case the aromatic and stimulant flavor is very decided.

The chemical analysis of sumbul has been the subject of research by many German chemists—Reinsch, Schnitztin, Frichinger and Kalthofer. According to Reinsch, this root contains besides water, traces of an ethereal oil, two balsamic compounds, (*resins*) of which one is soluble in ether, the other in alcohol, wax, aromatic spirit, and a bitter substance soluble in alcohol and water.

A solution of this bitter substance, treated with lime and chloride of sodium, gives a sediment composed of gum, starch and saline matters. The balsams appear to contain the perfume, which, it may be remarked, becomes more intense if diffused in water.

The *sumbul* also contains an acid, to which Reinsch proposes to give the name of *sumbulic acid*.

Kalthofer has, moreover, investigated its pharmaceutical properties. He has obtained a yellowish alcoholic tincture of a musk-like odor, and a rather bitter taste, a yellow ethereal tincture of

similar odor and stimulating tastes, together with a waxy matter, which precipitates from the aqueous decoction.

From the foregoing, it follows that from *sumbul* can be obtained for medicinal purposes, two tinctures, one alcoholic, the other ethereal, appearing to contain different principles, and which can be given either alone or associated with other preparations; and, finally a bitter extract soluble in water, which can be given in pilular form.

The powder of the root may be administered either in substance or in pills.—*Journal de Pharm. from Union Medicale.*

ALOÏNE, THE PURGATIVE PRINCIPLE OF BARBADOES ALOES.

By M. J. Stenhouse.

[In the *Journal de Pharmacie* for April 1851, it is stated that Messrs. T. & H. Smith of Edinburg, have recently discovered the active principle of aloes, to which they have given the name of *aloïne*, and which presents itself in the form of a crystalline neutral substance, of a straw yellow color. These, Chemists consider it the purgative principles of aloes. The discovery was made whilst evaporating a cold aqueous solution of aloes in vacuo with heat; the syrupy solution was set aside for a few days, and on re-examining it, a crystalline deposit was noticed, which proved to be the principle above noticed. Dr. Stenhouse has made the following analysis of this substance, which is taken from the same source.—Editor.]

Mr. Smith, apothecary, at Edinburg, has prepared impure aloïne, by treating aloes, previously pulverized with sand, with cold water. Evaporated in vacuo to a syrupy consistence, the extract thus prepared, is filled in a few days with a mass of granular crystals of a brownish yellow color. This is impure aloïne. In order to remove the brown matter associated with it, they re-crystallize it repeatedly from warm water, until the crystals have acquired a sulphur yellow. In making these solutions the temperature of the solvent should not rise above 150° F. At 212° aloïne oxidises rapidly, and is decomposed. In a state of purity, this body crystallizes in stellated groups of small prismatic needles. Their purity is shown by the color, which should not deepen by

exposure to the air in desiccation. It is completely neutral; its taste, at first sweetish, very soon becomes intensely bitter. Sparingly soluble in the cold, it dissolves more easily by the aid of heat. The alkalies and alkaline carbonates dissolve it easily in the cold, forming a liquid of an orange yellow, which deepens rapidly upon contact with the atmosphere, from the absorption of oxygen. Boiled with alkalies or strong acids, it is rapidly transformed into a brown resin. It colors a solution of chloride of lime at first yellow, then brown. It is not precipitated by corrosive sublimate, nitrate of silver, or neutral acetate of lead. Concentrated sub-acetate of lead produces a precipitate of an intense yellow, soluble in an excess of water, and becoming deeper colored on exposure.

Fuming nitric acid dissolves it cold, without the slightest disengagement of gas, forming a reddish-brown liquid. Sulphuric acid added in great excess to this solution throws down a yellow pulverulent body, which explodes when heated, and probably contains the elements of hyponitric acid. When aloïne is digested with warm and concentrated nitric acid, it is transformed into chrysammic acid with disengagement of copious red fumes. There is not in this reaction the slightest trace of picric acid. By dry distillation, aloïne furnishes a volatile oil of an almost aromatic odor, and a considerable quantity of a resinous substance. Burnt upon a platinum plate, it melts and takes fire burning with a yellow and brilliant flame. There remains a charcoal, difficult to incinerate.

According to the analysis of M. Stenhouse, the composition of aloïne is represented by the formula.

$$C^{34}\ H^{18}\ O^{4}$$

which has been verified by the analysis of a bromated compound, consisting of

$$C^{34}\ (H^{15}\ Br^{3})\ O^{4}$$

To obtain this bromated compound, which crystallizes more readily than pure aloïne, M. Stenhouse adds bromine to a cold aqueous solution of aloïne. It forms instantly a yellow precipitate which increases by repose, while the supernatant liquid assumes a very acid reaction, consequent upon the formation of hydrobromic acid. By dissolving the precipitate in warm alcohol, and cooling the solution, bromated aloïne is obtained in brilliant yellow needles,

grouped in stars. Chlorine appears to combine equally well with aloïne; but the chlorinated bodies are deprived of the power of crystallizing.

It has been long known in medicine that the aqueous extract of aloes is by far the most active part of the purgative; a fact easily accounted for, when we consider that aloïne, the real active principle of aloes, is soluble in cold water.

M. Stenhouse finishes his treatise, by suggesting that other species of aloes contain aloïne, and that the crystallization of this principle is alone prevented by the extractive matters associated with it, and which oxidise easily in contact with the air during the evaporation of the extract.—*Journal de Pharmacie, from Ann. der Chem. und Pharm.* lxxviii.

MEDICINE AND PHARMACY IN TURKEY.

By M. Landerer, Athens.

In all the large towns of the Ottoman empire, especially at Constantinople, Smyrna, Thessalonica, and Prussa, there are very distinguished physicians. These practitioners are chiefly Greeks, Germans, Italians, and French, who, having studied abroad, have come to follow their profession in the East, where, twelve or fifteen years ago, the want of qualified physicians was much felt. It may be safely stated, without depreciating other medical men, that German doctors and those who have studied in Germany, enjoy throughout the East the greatest reputation, and obtain a preference over all others. In the provinces and in the army, physicians of scientific education are rarely found, and the practice is confined to empirics, who have previously been Pharmaciens. Many of them have originally been employed by scientific physicians, and have become suddenly *hekins* (the name of Turkish physicians.) Although most of them do more harm than good, yet there are some who, in the course of years, have acquired practical knowledge, and perform real service to sufferers. These *hekins* are also Pharmaciens, and furnish the medicines themselves

always, however, with the consent of the patients and their relations. In proportion as the disorder appears likely to require more or less treatment, they require for a complete cure one, two, or as much as ten thousand piastres.* As soon as the contract is made, a third of the amount is paid in advance; when the patient is in a state of convalescence the second third, and the remainder when the cure is effected. If the patient happen to die during the treatment, the doctor receives nothing beyond the amount which had been paid in advance. Besides the above fees, which are considerable, the *hekins* receive from persons of high rank remarkable presents, consisting of horses, pipes ornamented with amber, worth sometimes from 6000 to 10,000 piastres, diamond rings, precious stones, &c. At the same time the persons attached to the Physician, whether as Surgeon or Pharmacien, obtain presents of less value, although not unimportant. If a *hekin* has succeeded in curing a distinguished personage his fortune is made, and he acquires the name of *hekin padischa* (first physician.)

Another class of doctors are the Surgeons (*gerrahs*,) and also the barbers (*berber*,) who, in the absence of physicians, perform the functions of *hekins*. They are found in their shops, where they attend patients, who receive the medicine on the spot. They also perform the minor surgical operations, sometimes in sight, to attract the notice of passers-by, and the most ordinary operation is then vaunted by the friends of the *gerrahs*, and by persons hired for the purpose, as an operation full of danger. In these shops or magazines, are kept, in old boxes not labelled, the medicinal substances most in use, such as sulphur, amber, sarsaparilla, corrosive sublimate, jalap, and tartar emetic. Serpents are suspended in the middle of the shop, or placed near the windows in glass jars. Patients can either purchase or borrow leeches and syringes.

As a third class of doctors we may mention the *kombojanites*, charlatans of the first order. They are met with especially in Asia Minor, Epirus, Macedonia, and Thessalia. They are criers at fairs, selling at stalls a number of remedies for divers diseases, and inventing all kinds of expedients to convince the credulous public of the efficacy of their specifics.

In Turkey, up to the present day, no law exists prohibiting foreign doctors from establishing themselves in any part of the

* A piastre is about 1*s*. 8*d*.

empire, without the authority of the Government. Any person may practice medicine as he thinks proper.

As for Pharmacy, this profession is in Turkey in the most deplorable condition. It is only in the first towns in the empire, and principally in Constantinople and Smyrna, that there are among a crowd of wretchedly bad Pharmaceutical establishments, a few which may be compared to those of Italy and France. Moreover, those who keep shops are many of them French, but the majority are Italians and Greeks. The shops of the latter are in much better condition than those of the Italians. The most detestable of all, and which scarcely deserves the name of "Pharmacies," are those kept by Armenians, Jews, and the Turks themselves. In the town of Constantinople, properly so-called, or the town of Byzance, the number of these small shops, where five or six persons can scarcely move, amounts to several hundreds. All their supply of medicines consists of about fifty or sixty different kinds, enclosed in boxes, in large glass jars of different sizes, and in small drawers. Most of these substances have no labels, from which circumstance the most unpardonable mistakes continually occur. In other shops, which are not much better furnished, are found an innumerable quantity of jars and boxes, either empty, or in which the same article is repeated five times or more under different names. Thus, in Constantinople, I have seen in the shop of a Jew of Salonica, *vitriolated tartar* contained in seven vases, and under seven different but synonymous terms: and on my inquiry whether these were not the same substance, I was told that each salt possessed a particular curative virtue, and required a distinct mode of preparation.

There are at Constantinople nearly 1200 *Pharmacies* of this description. About 300, resembling more or less those of Europe, are worthy of the name. The latter are in the districts of Galata, of Slavodronia, and in general in those parts of the town inhabited by Europeans. Even these establishments have their faults, and quackery triumphs. Few of these shops have what may be termed a laboratory; as rarely have they ware-houses or cellars. It is in the shop itself that all the medicinal substances are accumulated and prepared. The best arrangement observable in the Turkish shops, is that the medicines are enclosed in glass cases; by this means they are protected from the terrible dust which, in the sum-

mer months, pervades all the towns in the east. In addition, however, there are on stands or on the counter, large jars, containing colored liquors of all tints, vessels in which serpents and other reptiles are preserved, and near the shop, jars of oil, retorts, Wolfs bottles, and other apparatus exposed to public view. Near the windows are placed large glass cylinders filled with blue vitriol, cut sarsaparilla, symlax, cinchona bark, crystals of tartaric acid, vases and stands on which are small caustic balls strung together like beads, bougies, syringes, &c.

All the chemical products are obtained from the great towns of Europe, and the compounds prepared are chiefly plasters and the most ordinary ointments. As neither a Pharmacopœia nor price lists exist in Turkey, each Pharmacien prepares and sells his medicines as he thinks fit, and according to the greater or less percentage which he gives to the doctor who sends him prescriptions. This percentage ranges from twenty to fifty. From this, some idea may be formed of the precarious position of a Pharmacien who depends upon the small profit he derives from retail business, or the preparation of a few prescriptions which are brought to him either by mistake, or by the particular favor of the patients. This abuse exists chiefly in Smyrna. There the Pharmacien would not venture to prepare any prescriptions but those emanating from the physician attached to his establishment, without exposing himself to great annoyance.

With regard to the personal qualifications of the Pharmacien, he is almost entirely destitute of scientific education. This glaring defect arises from the indifference of the Government, which does not oblige the Pharmacien to obtain a diploma as an evidence of his qualification. Hence it is a common occurrence, that the assistants or employees of the physician finish by establishing themselves as Pharmaciens. Among the numerous Pharmaciens at Constantinople, scarcely ten or twelve can be found who have gone through any scientific study in a university.

Many years ago, the Government established at Constantinople a school of medicine, where young Turks received instruction from distinguished Physicians educated in France, Italy or Germany. However, up to the present time, the results of this institution are no subject for congratulation, notwithstanding the great expense of its maintenance.

An abuse tolerated by authority, and which seriously injures the Pharmaciens, is the sale by merchants of every description of medicine, not only by wholesale, but even in single doses, and at a very low price, from which it follows that most of the Turks and Armenians in cases of small importance, never apply to a Physician, but always go to these Druggists for some simple remedy, such as senna, cassia, tamarinds, &c., of which the vender himself makes a decoction if the patient desire it.

Among the medicinal substances also found in these bazaars, I may mention different conserves of roses, of cedar, of orange flowers mixed with strong aromatics, such as cloves, ginger, amber, and musk, which electuaries are considered by the Turks as universal panaceas; syrup of alkermes, Leroy's mixture, antisyphilitic syrup, sarsaparilla, sassafras, pistachios, almonds of the *pinus cembra*, nuts, opium, many narcotic tinctures, bad preparations of cannabis, &c., &c.

The weights used by the Turks are *okas* (2¾lbs.) and *drachms*: for measuring liquors in drops, grains of corn are used. The inaccuracy of this measurement is obvious, as some Pharmaciens for the sake of gain, purposely select the smallest grains possible. As Pharmaciens are not obliged to prepare their medicines by any dispensatory published by authority, each has his own process. It follows that the same medicine obtained at different shops, is entirely different in its medicinal properties.

This is an outline of the state of Pharmacy and Medicine in the principal towns of Turkey, and the further you advance into Asia Minor, the more does this merge into empiricism, and the practice of medicine is found in the hands of ignorant and grasping quacks, whose only desire is to obtain money and to sell for 200 or 300 piastres the most insignificant remedy, by making the credulous consumers believe that it is prepared with gold or precious stones. Sometimes, in the presence of the purchasers, to induce a belief in their statements, they throw gold and precious stones into a colored and acidulated liquid, which is to form the desired remedy. A friend of mine, quite worthy of belief, who resided several years in the interior of Asia Minor, assured me that he had seen a *kombojanite* physician, who was instructed to prepare for a pacha a remedy for a jaundice, throw thirty ducats, a quantity of pearls and jewellery, in a red liquor to dissolve them. The liquor was evapo-

rated, and a medicine was thus formed having an acid and bitter flavor, for which the pacha paid 500 piastres.—*London Pharmaceutical Journal*, November, 1850, from *Archiv der Pharmacie, and Journal de Pharmacie d'Anvers.*

NOTE UPON SOPHISTICATED OIL OF WORMWOOD.

By B. W. Bull.

Specific gravity, Pereira, .972. Löwig, .973. Brisson, .9703. Brandes, ,9725.

The essential oil obtained by distillation from the Artemisia Absinthium does not seem to have received much attention from chemists, and its properties are accordingly imperfectly understood. Löwig says that " at 180° C. it enters into ebullition, between 200°-205°, the boiling point remains constant for some time, but finally rises, while the residue generally becomes thick in the retort.

The sample in question was part of a large lot obtained from Boston; the odor and general appearance indicated an article of superior quality, but its specific gravity, .920, led to the suspicion that it contained some admixture of foreign substances. A portion of it subjected to distillation in a sand-bath, entered into an active ebullition at 85° C.—185° F., while a copious distillate appeared in the receiver. The thermometer rose slowly to 198° F., the quantity gradually diminished until the latter point was reached, when it ceased altogether. At about this temperature the liquid ceased boiling, and the thermometer rose steadily to 200° C.—392° F., when ebullition again commenced. Between these two latter temperatures nothing came over. The distillate was limpid, colorless, and possessed a saccharine pungent flavor, somewhat masked by the characteristic aromatic taste of wormwood.

In order to ascertain the amount of foreign volatile matter present, a second portion, weighing 2,187 grains was subjected to distillation from a suitable vessel. The same phenomena were observed, and the residue, after the operation was finished, weighed 1,331 grains, indicating a loss by the process of 856 grains, or a trifle over 39 per cent.

The distillate in this case was, however, somewhat colored by a portion of the oil, which had been mechanically carried over during the operation. Its specific gravity at 66° was 874. It was inflammable, burning with a white flame slightly tinged with green. The saccharine flavor mentioned above was very perceptible, suggesting at once the presence of chloroform.

The residue of undistilled oil possessed a thick, syrupy consistence, as might have been expected after parting with so large a proportion of its substance. Its color was somewhat darkened by the action of the heat, but its flavor was very slightly, if at all affected. Specific gravity at 66°, 949.

The distillate obtained by this operation, amounting to nearly two fluid ounces, was re-distilled carefully from a water bath. It commenced coming over at 167° F., the largest portion came over between 173° and 176°, and the remainder at a temperature not exceeding 178°, leaving in the retort a trifling residue, consisting of the oil mechanically carried over during the previous operation. The first half was received in a separate vessel. Its specific gravity at 70° was 889, it possessed in a high degree the saccharine flavor above mentioned, though still somewhat concealed by the flavor of wormwood.

The last portion was almost entirely free from any flavor of chloroform, and consisted of alcohol, somewhat modified in taste by a slight flavor of wormwood. Its specific gravity at 70° was 832.

It will be observed that the opposite gravity of the last portion which came over at the higher temperature, was lower than that of the first, owing to the fact that the chloroform passed over first, as was to have been expected, from its lower boiling point, and from distillation having been carried on slowly for this purpose.

The above experiments were considered sufficient evidence to prove that this sample, purporting to be Oil of Wormwood, had been adulterated to the amount of nearly 40 per cent. with volatile matter, consisting of chloroform and alcohol, or with a mixture of the so-called chloric ether and alcohol. It is quite immaterial in which of the above forms these substances were introduced, as the result is of course the same in both cases. It was not considered necessary, in order to complete the proof, to separate the chloro-

form from its solution in alcohol, which might easily have been done, since the amount of oil examined yielded a quantity quite sufficient for the purpose.

The undistilled residuum was next examined. Its specific gravity at 66° was 949, only. It left a fixed stain upon paper, which (as it was perfectly soluble in 80° alcohol) was probably owing to a further admixture of resinous substances. An addition of this kind would very naturally suggest itself, to correct the limpidity occasioned by such a copious admixture of diluents.

Since the above examination was made, another sample of the same substance from a similar source, was found to contain an adulteration to the extent of nearly 70 per cent., consisting mainly of oil of turpentine. Its specific gravity was 902.—*New York Register of Medicine and Pharmacy, April* 1, 1851

MANUFACTURE OF SULPHATE OF COPPER.

The commercial manufacture of sulphate of copper, and the apparatus employed, is very simple. In a wooden vessel lined with stout sheet-lead, a certain quantity of oil of vitriol is introduced, to which copper-scales are added, until a saturated solution of sulphate of copper is obtained, the operation being assisted by the aid of steam, blown in through a lead pipe dipping to the bottom of vessel; the mother-liquor of a previous operation is then added, and the whole set aside to crystallize. The crystallizing vessels are of wood lined with lead. These are placed in a warm room, and a crop of crystals is usually obtained in the course of four or six days. The mother-liquor being poured off, the crystals are placed in the drainer, after which they are dried, and packed in casks for sale; or, what is of more frequent occurrence, taken from the drainer whilst still damp, and in that state packed for sale.

The copper-scales above mentioned consist of a mixture of metallic copper with oxides of that metal, and are obtained in the form of thin plates or scales from the sheets of copper which have undergone the process of annealing, by being heated in a furnace or forge. A portion only of these scales are dissolved by the sulphuric acid; the residue is therefore washed, dried, and sent to

the copper furnace to be melted. The following shows the result of two operations on the commercial scale.

First Operation.—5 cwt. 2qrs. of copper scales, 685 lbs. of sulphuric acid, sp. grav. 1700, and a sufficient quantity of water, produced 5 cwt. 2 qrs. 24 lbs. of crystallized sulphate of copper; also 122 gallons of mother-liquor, sp. gr. 1180, and 160 gallons of ditto, sp. gr. 1100. A certain quantity of sulphate having been obtained from a given number of gallons of each of the mother-liquors, the total produce of sulphate of copper was estimated at 1240 lbs. 2 cwt. 1 qr. 8 lbs. of insoluble copper remaining.

Second Operation.—Copper scales 7 cwt., sulphuric acid, sp. gr. 1700, 800 lbs., water, q. s., produced crystallized sulphate of copper, 7 cwt. 1 qr. 14 lbs.; 138 gallons of mother-liquor, sp. gr. 1176, and 116 gallons, sp. gr. 1080, total crystallized sulphate of copper was estimated (in the same manner as in the first operation) at 1651 lbs,; the quantity of insoluble copper residue being 2 cwt. 3 qrs. 18 lbs. In these experiments, water was used instead of the mother-liquor of a previous operation, the object being to ascertain the exact amount of salt obtained from a certain quantity of copper scales.

A not unfrequent custom in the manufacture of sulphate of copper is the addition of the "pickle," or "dipping-liquor" of the coppersmith and brazier, to the solution of copper in sulphuric acid above-mentioned, and in some cases the pickle or dipping-liquor alone is employed to furnish crystals of this salt, the excess of acid being neutralized with oxide of copper.

The pickling or dipping process consists in the immersion of copper, brass, and other metallic alloys in an acid solution, for the purpose of removing the film of oxide with which the metal has become covered, and which oxide must be removed in order to render the metallic surface sufficiently clean for the reception of varnish, lacquer, or other finishing, as well as also for the coating of the surface of one metal with another.*

There could be no objection to the use of this pickle or dipping-liquor, if copper articles alone were immersed in the acid; but as

* In the tin-plate works, large quantities of sulphate of iron are obtained by the evaporation of the pickle in which the iron plates are dipped for the purpose of cleansing them, previous to their immersion in the bath of melted tin.

articles formed of brass and other metallic alloys are also dipped in the same pickle, the sulphate of copper thus obtained cannot be pure. Again, a mixture of nitric and sulphuric acid is sometimes employed, constituting another source of impurity.

In Birmingham, some hundred tons of dipping-liquor are annually made, and employed in the manufacture of sulphate of copper; the consequence being that the sulphate contains a large portion of zinc, which may sometimes be seen in the form of slender white needles on the surface of the dark blue crystals. Nickel, lead, arsenic, and antimony are sometimes present in the so-called sulphate of copper, manufactured either partly or entirely from the pickle or dipping-solution.

In addition to its medicinal uses, this salt is extensively applied in the arts, particularly in the manufacture of Scheele's or emerald green, and other pigments. Large quantities of sulphate of copper are also disposed of in the autumn and spring in the agricultural districts, it having been found that seed-corn steeped in a solution of this salt previous to being sown, is an effectual remedy against the disease of wheat called the "smut."

The impure sulphate of copper before mentioned, which is sold at 4*s.* to 5*s.* per cwt. below the price of good sulphate, will do very well for agricultural purposes, but as sulphate of zinc is not equally efficient for preventing the smut, the farmer must employ a larger quantity of the impure salt to effect the desired purpose, and thus gains nothing from its use. The *very impure* sulphate of copper is of a much lighter colour than the genuine salt. Sulphate of copper from sources likely to be dashed with the contents of the pickling or dipping-pot, should at all times be viewed with much suspicion.—*Pharm. Journal and Transactions*, April 1851.

ON THE MILKY JUICE OF THE LETTUCE AND THE POPPY.

By Aubergier.

Aubergier cultivated *Lactuca sativa* and the poppy on the large scale in order to obtain lactucarium and opium. In lactucarium he found *lactucin, mannite, resin, cerin, asparamid, a brown color-*

ing substance, *oxalic acid*, and *various salts*. In the year 1844, he sent fifty kilogrammes of solid lactucarium procured by himself to the exhibition at Paris.

The poppies were cultivated in rows, and the capsules cut as soon as they were perfectly developed. The collected juice was daily dried in the sun. On examining the various samples, Aubergier obtained the following results:—

KIND OF POPPIES.	Period of Gathering.	Weight of the Opium after being dried *in vacuo* at 212° F.	Loss in Water.	Morphia obtained from 25 Grains of Opium.	Quantity of Morphia calculated from 100 parts of Opium, containing 7·60 per cent of Water. The Normal Quantity according to Payen.
	1844.				
Opium from the white poppy	July 5, 11	90.52	9.48	2.100	8.570[15]
Ditto	" 17, 20	92.53	7.67	0.380	1.520[16]
Opium from the purple-red poppy . .	" 10, 13	90.61	9.39	2.640	10.690
	1845				
Opium from the white poppy	July 2	88.42	11.58	1.588	6.630
Ditto	" 28	88.55	11.45	1.329	5.530
Ditto	Aug. 13	89.02	10.98	0.777	3.270
Opium from the purple-red poppy . .	July 21	88.40	11.60	2.659	10.370
Ditto	" 26	87.09	12.91	2.517	10.694
Ditto	" 16	89.05	10.95	2.919	11.230
Opium from the oil-poppy (*Pavot oeillettes*)	" 29, 30	88.29	11.71	4.260	17.833
Ditto	Aug. 21	86.69	13.31	3.482	14.780

This table shows that the first crop of 1844 contained more morphia than of 1845, and the reason is, that in the first case, round poppy heads were cultivated together with long ones, which latter contained more alkaloid. The decrease in the proportion of morphia in the three crops of the white poppies in 1845, is in consequence of the advanced ripeness, and the statement that the collection should be commenced when the green color is beginning to change into yellow, cannot therefore be correct.

If the incision be made into the external part only of the pericarp, the seeds ripen, and oil may be manufactured from them, but if the incision be made quite through the pericarp, the ripening of

the seeds is stopped. The white poppy with black seeds (*pavot a oeillette*) has so thin a pericarp, that by the incision the seeds are lost, but the opium obtained therefrom contains the largest proportion of morphia.

With regard to the cultivation of opium in France, Aubergier further observes, that the expenses incurred by the collection do not exceed the fourth part of the value of the crop, and if the seeds can be saved, their price will cover the rent and all other expenses. Six laborers gathered in 1846 at Clermont, 2,730 kilogrammes of milky juice=682 grammes, or twenty-two ounces and seven-tenths of dry opium. The quality of the opium depends on the species of poppy, and in the same variety of poppy, on the more or less advanced maturity of the fruit when the opium is gathered. The climate has no influence upon the quality of the opium and on the quantity of morphia obtained from opium cultivated in France and in Algiers.—*Pharmaceutical Journal, May* 1, *from Central Blatt*, Dec. 1850, p. 846.

MITCHAM: ITS PHYSIC GARDENERS AND MEDICINAL PLANTS.

PEPPERMINT, ITS CULTIVATION AND PRODUCE.

(Continued from page 150.)

Land intended for peppermint, should be of a rich friable soil, rather moist, but not stagnant. If poor, it should have about twenty tons of manure to the acre, nor less than twelve if previously dressed; if more, the plant is apt to go to leaf at the expense of the oil. This should be ploughed under ten inches deep in the surface, in the beginning of winter, for although the stolons run upon the surface, the main roots descend deep in the soil, and this proceeding is requisite to keep the plants in a growing state during the hot part of summer. At the latter end of March, the furrow ridges are harrowed down to make the ground level for the planters, who proceed with an instrument resembling a rake, having four large projecting teeth set to the distance the rows are intended to be apart, which is from four to eight; when eight they are one foot apart; when only four, they are eighteen inches apart, and the plants one foot apart in the rows, and between every bed

two rows are missed or left out for the allies the following year. The described tool is drawn up and down the land, marking the true position of the rows; the first year the allies are not thrown out. The planting is begun when the plants are about four or five inches high, according to the season, which is in April. The plants are the skimmings of old beds where they rise above four or five stems, or from old beds intended to be destroyed, or are purchased by the bushel. They vary very much in price, according to the previous season; about five shillings commonly, but sometimes from three shillings to twenty shillings. Although last winter was mild, they were very scarce, owing to the previous dry summer, which killed many of the old plants. The older the plants, the more oil they produce, in proportion to the bulk of stems. The first year the beds require hoeing five or six times, at an expense of six shillings per acre. The second year, at the approach of winter, the allies are thrown out to cover the mint, about two inches deep, for which the men are paid eighteen shillings per acre; if manured, three shillings more for spreading. The soil lays rough until the beginning of March, when it is harrowed down with light harrows, after which the beds are thinned for future beds, leaving about four or five to each stole, according to strength. Then follows dotting; that is, a man going over the beds, and pecking out the weeds with the corner of a hoe, and throwing them into the allies. For this he is paid four shillings per acre. From this time, until the mint is fit to cut, it is hoed about four times, at six shillings per acre. I omitted to say that the first planting cost twenty-one shillings per acre for labor. The third year is the same as the second, but the allies then becoming so deep and wide, occasion such an encroachment on the beds, that they are destroyed for other crops, but are frequently ploughed in for future plants the next spring, when they are entirely destroyed. Cutting begins when the mint is well in flower. The men are paid twelve shillings per acre for cutting. Their business is to cut the plant and lay it in Prussian mats (which are less than the Russian) in bundles weighing 1 cwt. each, in which, if the weather be wet, it is skewered up and taken to the still at once, as the rain occasions a great loss of oil. But should the weather be favorable, it is dried in the field, for reasons to be explained.

The stills commonly hold a ton; that is, twenty bundles of green

mint, but when dried, thirty. When stills are hired, they charge twenty-one shillings per still, or once filling, which makes it advantageous to the grower. Green mint will run off three-and-a-half pounds on the average, and dry mint from four to five pounds. An acre of mint produces about five tons; that is, from four to six, as seasons produce great variations, both in plant and oil. *Spearmint* is treated in a similar way to peppermint, but the plant being stronger, requires more room. It is but little grown here, and that for culinary purposes.

Diseases of the Mints.

The greatest detriment to mints is termed the smut or parasitical fungi, of which there are three species, very troublesome, but more so in dry summers, which occasion the plants to get rusty and lose their leaf, diminishing the bulk very much. The worst is *Æcidium menthæ*, which spreads over the whole plant. It is of a dull yellow color, and attacks the plant just before it flowers. The next is *Uredo Labiatarum*. This attacks the under side of the leaf, and is frequently mixed with the former. It is of a light brown color. A third species, *Puccinia menthæ*, attacks the plant in spring, and frequently disappears before the others are seen. The under part of the plant being covered with minute bluish spots, especially in wet seasons. Other fungi of a higher order, are parasitical on the stems after cutting, and probably arise from decay.

The mints or other medicinal plants grown in this parish, are on a small scale, many growers not having above half an acre, and of lavender about the same: the above are the principal herbs grown here; besides two or three small general growers, who supply Covent Garden.

About fifty acres of mint, and fifty of lavender, are grown at Carshalton.

*Lavendula latifolia** has been grown here, and seeds very freely, but is not held in very high estimation.—*Pharmaceutical Journal and Transactions* Jan. 1851.

**Lavendula latifola* is the *L. spica* of De Candolle.—Ed. Ph. J.

ON THE PREPARATION OF VEGETABLE ALKALOIDS.

By Mr. John S. Cobb,

I wish to call the attention of this meeting to a peculiar process for the preparation of the vegetable alkaloids. This process, remarkable as well for its simplicity as for the advantage with which it may be applied to the preparation of small quantities of these salts, is based upon the property which charcoal possesses, in common with some other substances, of extracting and retaining certain principles from the liquids with which it is placed in contact. The credit of its application to the above purpose is due to M. Lebourdais. That gentleman had undertaken some experiments in order to demonstrate the pre-existence of the vegetable alkalies in plants, and for that purpose was endeavouring to discover some more direct mode of extracting these salts than the one commonly employed. Having poured into a phial containing some charcoal an aqueous solution of extract of digitalis (previously precipitated by acetate of lead) and shaken the bottle, he was surprised on finding, when the charcoal had subsided, that not only had the liquid become colorless, but also it had entirely lost its bitter taste. It immediately occurred to M. L. that the charcoal, under the influence of some other solvent, would cede again the bitter principle which it had extracted from the liquid. He, therefore, washed and dried the charcoal and treated it with boiling alcohol, which became slightly colored, and charged with all the bitter principle.

Evaporated in a water-bath this left for residue an amber-colored liquid, which, by repose and refrigeration, deposited a pulverulent matter. This, separated by filtration, washed, and dissolved in alcohol, gave, by spontaneous evaporation crystals of digitaline.

Having thus ascertained the practicability of the process in reference to digitaline, M. L. proceeded to test its applicability to the extraction of the alkaloids of other plants, varying somewhat the manipulation according to the substance operated upon.

Thus he obtained scillitine in the same manner as digitaline, while to procure illicine, he boiled a decoction of the leaves of the ilex aquifolium with charcoal, and then washed, dried, and treated as previously the charcoal.

For the preparation of columbine, strychine, and colocynthine, he operated as follows:

Having deposited in the part of a funnel a layer of well-washed charcoal, he placed the respective substances (previously moistened) upon it, and, by percolation with water, exhausted them of their active principles, which, however, were ceded by the water in passing through the stratum of charcoal. The charcoal was then treated as previously described, and the alcohol yielded, by spontaneous evaporation, crystals of the respective bases.

A remarkable property connected with the last-mentioned bases is, that by a long-continued stream of water they may be redissolved from out the charcoal which had absorbed them, and this solution being filtered through charcoal, they again combine with the latter substance. M. L. did not find this to be the case with any other of the bases which he examined.

By similar manipulation to the above was obtained an alkaloid, which was the subject of an interesting paper from Mr. Bastick at the last meeting, but which, I think, that gentleman is mistaken in supposing to be a *new base;* for so long age as 1848, M. Lebourdais published an account of arnicina, which he described as "a substance having the aspect and consistence of Venice-turpentine, slightly soluble in water, but the small quantity dissolved communicating to it nevertheless a bitter taste: soluble in all proportions in alcohol; and this solution, by spontaneous evaporation under various circumstances, invariably leaving a residue having the aspect and consistence above described."

In a series of experiments which I made shortly after the publication of M. L.'s process, I found that as a general rule the alkaloids of those substances not containing much colouring matter may be most conveniently prepared by the simple percolation through charcoal, &c.; while those rich in colouring matter require previous precipitation by acetate of lead, excepting of course those substances (as the arnica) whose base is precipitated by this salt. I also found some slight variation of the above process necessary for obtaining certain of the alkaloids in a crystallized form. Thus, in the preparation of atropine, I found it necessary to add a small quantity of water to the alcohol, and to evaporate only till the liquid assumed a milky appearance; with this slight variation, however, I obtained atropine by the above process with compara-

tive facility, though I confess that the quantity was small, lbj. of the root yielding me but about eight grains of the base. This I attribute, however, to not being able to procure the root in a good state of preservation.

I have also obtained rhabarbine by this process, and as I believe the notices of this substance at present published are rather vague, perhaps I shall not be trespassing too much on your time in giving a short account of it.

It is of a yellow colour, and by the aid of the microscope, is seen to consist of long prismatic crystals; it is fusible at a gentle heat, at a higher temperature, in part subliming in the form of a yellow powder, in part decomposing to a black mass: it is soluble in ether and in boiling alcohol, and insoluble in solutions of the caustic alkalies, which do *not* redden it.

I do not consider the substance obtained by the process to be the rhabarberic acid of Brande's, for that is reddened by the alkalies, and also would appear to be eliminated in the first part of the process, since it is precipitated by acetate of lead; I consider it rather to be the "rhein" of Dulk, which he states to be the real principle of rhubarb, and to become rhabarberic acid by oxidation.

Now, on the supposition that such is the case, it becomes a point of some interest in Pharmacy to determine whether the precipitate occurring in tincture of rhubarb may not be caused by the oxidation of its active principle, and how far the tincture may be deteriorated by such circumstances.

The CHAIRMAN, in reference to the allusion made in Mr. Cobb's paper to the elimination of the active principle of rhubarb, said, that a good test for distinguishing Russian from East Indian rhubarb was much wanted, and suggested that probably the process described by Mr. Cobb might be applied for the purpose.—*Pharmaceutical Journal and Transactions*, March 1851.

ON EXTRACT OF HENBANE.

By Mr. Charles Cracknell.

(From the Transactions of the Pharmaceutical Society, London.)

I have selected extract of henbane for my subject this evening, not only on account of its being one of the most useful and most powerful extracts prepared from any indigenous plant, but because it elucidates what I am about to state, and exhibits the differences I am about to describe in a more marked degree than any other extract, and consequently requires the greatest amount of care in the preparation of it.

In order to render myself as clearly understood as possible, I shall speak separately of the three most important circumstances to be attended to in the making of the extract.

Firstly.—The selection of the herb.

Secondly.—The expression and evaporation of the juice.

Thirdly.—The result.

First then the selection of the herb—and this is manifestly a very important division of my subject, for a good product is not likely to be obtained from a bad or unfit material—yet, notwithstanding its importance, it is the very thing least attended to. Our Pharmacopœia (I hope soon to have the pleasure of saying our *late* Pharmacopœia) gives a license for gathering the plant which I cannot but think quite unjustifiable, and which defies at least all uniformity of result, and most writers on the subject confine themselves to the manufacture of the extract. For reasons to be presently stated, I believe that henbane is only in a fit state for extract during a very short period, that is to say, when the flowers at the summits of the plants and its branches are blown, but before they show any symptom of fading. If the plants have been carefully gathered and sent to London, and have not grown amongst high weeds, the leaves will then be green to the bottom of the central stem, the seed vessels and seeds which are formed will be soft and juicy, and the weight of the plant will reside in the leaves and stems: if it be allowed to stand a little longer the lower leaves become more or less yellow—the seed vessels, particularly the lower ones, become hard and prickly—the seeds assume a brownish color, and on holding the plant by the lower part of the

stem, it will be perceived that the weight then resides chiefly in the top. Of the immature plant but little is met with in the market: a description of it is obviously impossible, as I should call it too young at any period before the one first mentioned; the extract yielded by it I shall describe presently. Much has been said at various times about the relative strength of the extracts made from annual and biennial hyoscyamus, and I believe that the opinion is gaining ground that they may be used indiscriminately. It is not my intention to dwell upon this part of the subject now, but I may remark in passing that the physical characters of the two plants and their extracts differ considerably, and in the absence of proof, I have no hesitation in deciding in favor of the biennial—such then is the plant I always use, and to which my present remarks refer.

I now come to the preparation of the extract. The market bundles, which are always more or less heated, should be opened immediately they are received, and the herb spread in a cool place; the leaves, flowers, soft stalks, and seed vessels should then be stripped from the large hard stalks as quickly as possible, ground in a mill (without being sprinkled with water as directed by the Pharmacopœia, as there is already more of that ingredient than the careful operator desires) and the juice expressed, strained through some coarse material, and conveyed to the evaporating pans. I may here remark, that the practiced eye can predict the quality and character of the extract by looking at the juice. The juice yielded by the immature plant is of a bright grass green color; that by the plant of proper age is of a deep dull green color, such as would be produced by a certain mixture of brown and green; and that by the plant when too old is of a brown color, with some green coloring-matter floating in it, which speedily settles to the bottom. In a valuable paper read in this room on the 13th of November, the process of evaporation was so ably discussed that little remains to be said on the subject. I believe the best methods, and which are always at command, to be a water-bath, or the passing a current of warm air over the surface of the juice. Among the advantages of this latter process stated by Mr. Archer, there is, however, one with which I beg to differ; he says, "The evaporating liquid requires no stirring, or other attention, from

the commencement to the conclusion of the process." Now in practice, I find, that an inferior extract (not of course in strength, but in other qualities which I think very essential) is obtained by leaving the juice to itself to that which results from constantly stirring it; stirring accelerates the evaporation, and produces an extract more convenient for the use of the dispenser, inasmuch as it is less adhesive, and can consequently be weighed in small quantities with much greater facility and dispatch.

I now come to the last division of my subject—the result; the quality of which must, in a great measure, depend on the efficiency with which the two first have been conducted. Strength, doubtless, is one of the most important properties of the extract, but there are other qualities not less important, and which I think should never be sacrificed for obtaining a slight increase of it—such are durability and convenience; and to procuring these in combination with a strength which (although by certain processes it might be exceeded) I have never found equalled in the extracts of commerce, I now wish particularly to draw attention; the most important proceeding for obtaining such a product is the selection of the plant; there is only one time when it will yield it, which is the time already mentioned, and then the albumen and the deliquescent salts of the juice are so nicely balanced, and the product yielded so unexceptionable, that we may fairly look upon it as one of those wise arrangements of Providence which adapts everything to the use and benefit of man. If the plant be gathered too young, it will yield an extract not only deficient in strength, but possessing neither of the other necessary qualities—it is of a crumbly nature, dries very rapidly, becomes fetid and mouldy, and in a very short time totally unfit for use. If the plant be too old, it will yield an extract, very strong I believe, but void of durability and convenience, for it soon becomes fetid, which indicates change, and is very deliquescent, which is extremely inconvenient. The same may be said of extracts from which the albumen has been separated, a process which I do not think advisable under any circumstances, for I found the extracts made from the flowering plants of the very rainy season of 1843, keep exceedingly well for one year; some of them I kept more; in fact there is on the table some extract of hemlock which was then put into the same pot in which

it now is, and has been purposely kept without being moved or meddled with. It has lost the fine green color which it once possessed, but on dissolving a few grains in liq. potassæ last evening, and comparing it with a similar solution of last year's extract, I could not perceive any difference in the strength. I believe that if the herbs were well dried and carefully kept for twelve months, they would then yield, by treating with water, an extract much stronger than any that can be made from the green plant, but such extracts do not keep well, and are very deliquescent. Great strength then is not the only requisite of a good extract; it matters little to prescriber or patient whether four or five grains be ordered or taken, but it is very inconvenient to both dispenser and patient to have a box of pills in less than a week becoming soft, and running into a mass, which must be the case unless some dry powder be used in making them, which of course does away with the advantage of the additional strength: it is moreover very important that extracts should be of the same strength at one time of the year as at another, and such they cannot be unless they be made with every precaution to prevent change. Besides the extract of hemlock, already mentioned, there are on the table three samples of extracts of henbane, made in the month of June, 1848, '49, and '50, which have been kept in pots merely tied over with brown paper, and have undergone no change worthy of notice, and this is the best proof I can give of the value of the process I have been describing.

Mr. Bell agreed with the author of the paper in considering that the biennial plant yields a better extract than the annual. He believed, however, that the annual plant was very generally used in consequence of its yielding a larger quantity of extract than the biennial.

The Chairman corroborated Mr. Bell's statement, in reference to the relative quantities of extract obtained from the two varieties of henbane. He observed, with reference to the preservation of the extract, that the length of time during which it might be kept depended very much on the extent to which it was exposed to the air. Turning it from one pot to another would cause it to spoil sooner, by exposing a fresh surface.

Mr. Cracknell said he had no doubt that the extract made from the biennial plant was better than that made from the annual yet some botanists assert that there is no difference in the plants.—*London Pharmaceutical Journal*, March 1851.

ON THE TESTING OF CINCHONAS BY MEANS OF CHLOROFORM.

By M. Rabourdin.

I shall endeavor to show, in the following paper, the means by which we may estimate the alkaloids in cinchonas, by applying the property which chloroform possesses of dissolving these bodies when contained in an aqueous liquid.

Test of Grey Cinchonas—Ten drachms of the grey cinchona bark of commerce, powdered and passed through a fine horse-hair sieve, is to be moistened with a sufficient quantity of water acidulated by hydrochloric acid (five drachms of acid to 2½ lbs. of water,) and then packed in a displacement apparatus. A sheet of filtering paper is placed over it, and the powder treated with the acidulated water, which is continued until the liquor which passes through becomes almost colorless, and devoid of bitter flavor, (when the powder is uniformly and properly packed, it becomes exhausted when about six or seven ounces of liquid have been passed through it; 1½ drachms of caustic potash, and 7½ drachms of chloroform, are added to the liquor, which is to be quickly agitated for a few moments, and then allowed to settle. After a short time, never exceeding half an hour, the chloroform subsides to the bottom, carrying the whole of the cinchonine with it. The red and transparent liquid floating on the top of the deposit is to be poured off, care being taken not to remove any of the latter; water is to be added several times until the deposit is thoroughly washed; and then it is poured into a porcelain capsule. This matter is composed of a liquid portion, which is a solution of cinchonine, in chloroform, and of a semi-solid reddish portion, consisting of cinchonine, of chloroform in a state of emulsion, and of cinchonic red. The capsule is placed on a bath of boiling water, in order to evap-

orate the chloroform, and the residue is treated with water acidulated with hydrochloric acid, which dissolves the whole of the cinchonine and a portion of the cinchonic red. It is then to be filtered, and solution of ammonia diluted with fifteen or twenty times its volume of water added to it. This addition is made drop by drop, keeping it continually stirred; as soon as a white cloud appears which is not dispersed by the agitation, a sufficient quantity of the solution has been added. This part of the process effects the precipitation of the cinchonic red without touching the cinchonine. It is easy to determine when to terminate this part of the process, as the cinchonic red is precipitated in the form of reddish brown flakes, and the cinchonine, on the contrary, in white curdled flakes. When a sufficient quantity of dilute ammonia has been added, the liquor, which ought to be colorless, is filtered; the filter then washed with a little distilled water, and the united liquors precipitated by an excess of ammonia; the precipitate, which consists of pure cinchonine, whose chemical properties it is easy to determine, is then collected, dried, and weighed.

The first experiment yielded me 2.9 grains of cinchonine, and a second produced three grains. In taking the highest figure, we have 75 grains of alkaloid in 2lbs. 8oz. of grey cinchona.

Test of Yellow Cinchonas.—It is not necessary to operate on more than five drachms of the yellow cinchona bark, as the proportion of organic alkali in this variety of cinchona is much greater than that of the grey cinchona.

Five drachms of yellow cinchona, powdered, and passed through a fine horse-hair sieve, are to be exhausted with acidulated water, as in the case of the grey cinchona. The addition of the liquor is to be discontinued when it passes through colorless and insipid: we thus obtain from five to six ounces of liquid, to which 1½ drachms of caustic potash and five drachms of chloroform are added. These are to be agitated for a short time, and afterwards allowed to subside; there is then a dense whitish deposit formed, consisting of quinine, cinchonine, and chloroform; sometimes the separation is complete and effected in an instant, leaving a red transparent liquid floating on the surface, which may be immediately poured off; the chloroformic solution is then washed, collected in a small capsule, and by the spontaneous evaporation of the chloroform, the alkaloids remain in a pure state.

I think it unnecessary to speak of the testing of the red cinchonas, as they resemble the yellow, of which I have just spoken, and all I have stated respecting the latter is applicable to them.—*London Pharm. Jour.*, March 1, 1851, from *Repertoire de Pharm.*

ON THE PREPARATION OF SMYRNA OPIUM.

By M. Landerer.

The so-called Smyrna opium is prepared in the interior of Asia Minor, and chiefly in Kara Chissar, and in the neighborhood of Magnesia.

The plantations are in the neighborhood of a few small houses, which contain copper-kettles fixed in the walls, casks and shelves for drying the opium-cakes. The exhalations emitted by these plantations, especially in the morning and after sunset, are described by the Turks as very dangerous, and they avoid them by retiring towards evening to their huts, which they do not leave till after the rising of the sun. The author has himself experienced the effects, which manifested themselves by giddiness, dejection and uneasiness. As soon as the moisture of the atmosphere (which in the East is proportionably greater than in other countries, and supplies the place of the rain) begins towards evening to be condensed, a strong narcotic smell is developed. This, in those unaccustomed to it, gives rise, in about a quarter of an hour, to headache and nausea. The plants, grown partly from white, partly from blue seeds, attain a height of six to eight feet; and the laborers engaged in making the incisions into the capsules are quite invisible when working in the plantations. The size of the poppy-heads differ considerably; but if they are intended to grow very large, for the purpose of obtaining a greater quantity of opium of the first quality, about half or three-quarters of the heads are cut off, by which the remainder often attain the size of a child's head. The capsules which have been cut off are dried, and from the seeds, which are called *chas chas*, the natives prepare oil, which is exported to France; they also make use of it for culinary

purposes, but dishes dressed with it are apt produce headache and inclination to vomit, especially if the oil has not been heated. By means of a fork-like instrument or a bent knife, incisions are made on the capsules, either parallel or crosswise, and these are repeated as long as the milky juice escapes. To prevent any portion of the abundantly flowing juice being lost, it is caught in small sea-mussel-shells (Αχιβάδες), dried in the sun, and kept separate as the best quality. The incisions are generally made before sunrise, and every evening the dried but still soft juice is gathered from the plants, with more or less of the epidermis, by which the quantity is increased. The capsules, which yield no more juice, are cut off, tied in bundles, dried in the sun, and opened with a small knife, in order to remove the seeds. Seeds obtained from capsules which have been used for the preparation of opium, if sown, yield an inferior opium; hence the seeds which are sown are those which have been obtained from poppies not used for producing opium. The next process is the boiling of the poppy plants. Having been cut down with sickles, they are tied up in bundles and sent to the laboratory; there the leaves are separated from the stalks, and placed in the kettle for boiling. When perfectly boiled, both leaves and stalks are spread out in the fields, and towards the end of September they are burnt and the ashes employed as manure, together with sheep and goat dung. The decoctions which have been obtained by the first boiling, are then, without previously being filtered, evaporated in separate copper-kettles to the consistency of a solid extract; but although the mass is constantly stirred with wooden spatules, this process is performed with great carelessness, and the extract is often burnt during the process. Before making it into cakes, a part of the opium obtained by incision (*Lacrymæ Opii,*) is added at discretion to the extract produced by boiling, and the whole kneaded, partly with the hands, partly with a sort of large spoon. It is then formed into cakes of different sizes, wrapped in fresh poppy-leaves, and placed on the shelves to dry. It is the opinion of experienced opium manufacturers, that the half-dried cakes of even very inferior quality are much improved, if exposed every morning and evening to the abundantly falling dew. The perfectly dried cakes are then pack-

ed in small boxes filled with poppy-leaves, and sent to the bazaars, where they are sold by *okkas* and *dramms*.—*Archiv der Pharmucie*, September, 1850, p. 293.

PROCESS FOR DETERMINING THE AMOUNT OF PRUSSIC ACID IN THE MEDICINAL PRUSSIC ACID, BITTER ALMOND AND CHERRY-LAUREL WATERS.

By Prof. J. Liebig.

When a solution of caustic potash is added to a liquid containing prussic acid until it has a strong alkaline reaction, and a dilute solution of nitrate of silver is then slowly poured into it, a precipitate is formed, which on agitation immediately disappears again to a certain limit. When the prussic acid is mixed with a solution of caustic potash and a few drops of chloride of sodium, and then the solution of silver added, a certain proportion of the latter may be added as in the previous case before a permanent precipitate forms, which in this case is white chloride of silver.

The liquid containing prussic acid, when mixed with potash, contains cyanide of potassium, in which the oxide or chloride of silver are soluble, until the well-known double compound, consisting of equal equivalents of cyanide of potassium and cyanide of silver, is formed, and which is not decomposed by excess of potash. When, therefore, the amount of silver in the solution is known, and at the same time how much of it in volume or weight has been added to the alkaline liquid containing the prussic acid, until the formation of a precipitate, we can thence determine the amount of cyanogen or prussic acid in the liquid, for 1 equiv. of consumed silver exactly corresponds to 2 equivs. of prussic acid.

The following experiments by Dr. Fleitmann will show the accuracy of the method. In the first place, the amount of prussic acid in a very dilute solution was determined directly by precipitation with nitrate of silver; 100 cub. centim. of this prussic acid furnished 0·332 grm. cyanide of silver, corresponding to 0·067 per

cent. of acid. The same solution required for the complete precipitation of a normal liquid containing in 100 cub. centim. ½ a grm. of metallic silver, 53·5 cub. centim. 100 cub. centim. of the same prussic acid, mixed with potash, and then constantly shaken with the same solution of silver until the appearance of a milkiness, required 27 cub. centim. 150 cub. centim. of the same prussic acid required 40 cub. centim. of the silver solution; according to these experiments the liquid contained—

		By a measured quantity of normal liquid in		
		alkaline solution.		
	By Direct determination.	I.	II.	acid solution.
Prussic acid	0·067 p. c.	0·068	0·067	0·067.

Similar results were obtained by M. Fabre.

It follows from these experiments, that the method of determining the amount of prussic acid in an alkaline liquid by means of a normal solution of silver is as trustworthy and accurate as any of the best methods hitherto employed; whilst in several other respects, for instance the ease and quickness with which the experiment is made, it far surpasses them.

The presence of formic acid or hydrochloric acid in the prussic acid, which would render the determination of its amount by a normal solution of silver inaccurate, has not the slightest influence on its estimation in the alkaline liquid; and it has moreover the advantage, that as soon as the reaction becomes perceptible the operation is terminated, in which it is preferable to similar methods the completion of which depends on the cessation of the reaction. In the estimation in the alkaline liquid, both liquids that are mixed remain clear; as soon as the slightest permanent milkiness is perceptible, the analysis is finished, and to arrive at this point one or two minutes suffice. In ascertaining the quantity directly by nitrate of silver, a precipitate is formed, which renders the liquid turbid; towards the end of the operation it is necessary to wait until this has subsided and the liquid again become clear, in order to determine when no further precipitations occurs. Now with the dilute liquid the last traces of cyanide of silver settle with much greater difficulty than in the estimation of chlorine; and it

is precisely owing to this circumstance that the method is disagreeable and tedious.

Aqueous prusssic acid is so rarely employed for medicinal purposes, that a test for that is scarcely required; but the distilled waters of bitter almonds and of cherry-laurel, both of which contain prussic acid, are in daily use; and it is highly desirable that the amount of the active ingredients should, under certain circumstances, be ascertained with accuracy; the process described answers admirably for the purpose.

In general, cherry-laurel water is clear and transparent; the water of bitter almonds on the contrary, is usually milky from the presence of little drops of oil; and it is requisite to mix the latter with 3 to 4 times its bulk of water to render it clear, otherwise the termination of the reaction is not seen distinctly.

The method described may also serve to test the commercial cyanide of potassium; and by its means I have unexpectedly found that the cyanide prepared according to the method described by me contains a comparatively small amount of cyanide of potassium. Two samples from two different preparations were examined; the one furnished 63·5 per cent., the other only 59·99 per cent., of cyanide of potassium.—*Chem. Gaz.* March 1, 1851, from Liebig's *Annalen*, Jan. 1851.

RESEARCHES ON CINCHONINE.

By. Dr. Hlasiwetz.

The author has obtained two essentially different bodies in the fractional crystallization of commercial cinchonine, the first of which has all the properties generally attributed to cinchonine. It crystallizes in moderately large shining prisms, is tolerably soluble in alcohol, furnishes quinoidine when heated, and sublimes in part to a matted tissue of fine crystals. When sublimed in a current of ammonia or hydrogen, remarkably brilliant prisms, more than an inch long, are obtained. This substance possessed exactly the

composition required by Regnault's formula, $C^{40}\ H^{24}\ N^2\ O^2$. The sublimed acicular crystals have the same formula.

The second substance, which is obtained by successive crystallization, separates from the alcoholic mother-liquor of the cinchonine in beautiful hard rhomboidal crystals, which may be obtained of very considerable size and diamond lustre from ether, in which they dissolve very readily, which is not the case with cinchonine.

These crystals become opake when heated, melt, and on cooling solidify to an amorphous mass, and furnish, neither alone nor in a current of ammonia or hydrogen, a trace of crystals.

The analysis of this substance and of its platinum salt led to the formula $C^{20}\ H^{12}\ NO^2$, which is the composition of the so-called β-quinine detected by Heijningen in commercial quinoidine. The author calls it *cinchotine*.

Commercial cinchonine moreover contains a tolerable amount of a brown basic resin, which was not further examined by the author, but which appeared to be quinoidine. In a sample of beautifully-crystallized cinchonine from Merk's establishment in Darmstadt, the author found the composition to agree with the formula which Liebig first proposed, $C^{20}\ H^{11}\ NO$. From this he concludes that neither Liebig's formula nor that of Regnault should give way for that recently advanced by Laurent, as they actually represent certain kinds of cinchonine. The author has never been able to obtain Laurent's most recent formula with pure cinchonine; according to a series of most careful analyses, he constantly found numbers which led only to the formula $C^{40}\ H^{24}\ N^2\ O^2$. The platinum salt places this formula beyond doubt, and proves at the same time that it should be halved, and written $C^{20}\ H^{12}\ NO$.

In some attempts to oxidize cinchonine by various agents, the author always reobtained pure cinchonine. The cinchonine reobtained was in every case submitted to analysis. In the treatment with chlorine, with manganese and sulphuric acid, with permanganate of potash, with nitric acid, with chloride of phosphorus, further after ebullition with an acid solution of bichloride of platinum, and fermentations with emulsine, the cinchonine comes out unaltered, or a resinous mass is obtained, as in the treatment with chlorine, from the solution of which pure cinchonine was precipitated by ammonia. The results of the analyses of such different samples

all correspond to the formula C^{20} H^{12} NO, and are as follows:

	I.	II.	III.	IV.	V.
Carbon. . . .	77·78	77·75	78·24	78·15	78·06
Hydrogen . .	7·72	7·80	7·73	7·75	7·67
	VI.	VII.	VIII.	IX.	X.
Carbon. . . .	78·15	78·15	78·24	78·08	77·57
Hydrogen . .	7·62	7·64	7·73	7·28	7.65

When a solution of cinchonine in alcohol acidulated with muriatic acid is precipitated with bichloride of platinum, a crystalline precipitate of a light yellow, at first almost white color is obtained. This yields on analysis numbers which only accord with Laurent's formula C^{38} H^{22} N^2 O^2, so as to lead to the supposition that in the treatment with bichloride of platinum, C^2 H^2 had been eliminated in one form or the other. Experiments in this direction however showed nothing of the sort; on the contrary, it was found that in order to obtain a platinum salt corresponding to the formula C^{20} H^{12} N O, the precipitate of the cinchonine with bichloride of platinum must be redissolved in water, which requires very long ebullition. On cooling, a whitish pulverulent precipitate first makes its appearance, and after long standing, a dark yellow, very beautifully crystallized platinum salt separates, which had the following composition:—

Carbon	33·1		20	33·3
Hydrogen	3·6	. .	12	3·3
Nitrogen	. .	. .	1	
Oxygen	. .	. .	1	
Platinum	27·38	27·34	1	27·36
Chlorine	. .	. .	2	

The alkaloid separated from this platinum salt by sulphurretted hydrogen gave, after recrystallization, on analysis, numbers agreeing with the preceding:—

Carbon	77·83	20	77·92
Hydrogen . . .	7·65	12	7·79

The cinchonines of commerce are very variable preparations. Besides the one which contained β-quinine, the author analysed a beautifully white crystallized cinchonine, which was mixed with a mere trace of amorphous powder. It furnished:—

	I.	II.
Carbon	67·04	67·11
Hydrogen	7·42	7·58

This consequently contained much less carbon. It was dissolved in dilute muriatic acid, precipitated with ammonia; the precipitate, after being washed, recrystallized from alcohol, and analysed, was found to have the composition C^{20} H^{12} NO. Laurent's statements appear to be founded on a cinchonine which possibly contained a small quantity of β-cinchonine, the carbon in which is 4 per cent. less, very little of which therefore would suffice to lower the carbon equivalents in the formula.

Of the formulæ proposed for cinchonine, that of Regnault agrees best with the author's analyses; they however lead more correctly to the formula C^{40} H^{23} N^2 O^2, which requires C 78·18, H 7·49, N 9·12, O 5·21. The platinum double salt likewise corresponds with this, C^{40} H N^2 O^2+Cl^2 H^2+Pt^2 Cl^4.

Carbon	33·1	40	33·38
Hydrogen	3·6	25	3·48
Nitrogen		2	
Oxygen		2	
Chlorine		6	
Platinum		2	27·42

That in this formula there are 2 equivs. of bichloride of platinum to 1 of cinchonine, may, according to the author, be explained by the fact, that the salt is only formed upon the addition of HCl.—*Chem. Gaz. March* 1, 1851, *from Proc. Imp. Acad. Vienna*, 1850.

ON THE MANUFACTURE OF ACETATE OF LEAD, AND ACETIC ACID.

By Jacob Bell, Editor of the (London) Pharmaceutical Journal.

Acetate of Lead or Sugar of Lead; *Manufacture of the Brown Acetate or Pyrolignite of Lead.*—The distilled pyroligneous acid is saturated with litharge in a tub, and the muddy solution ladled out

into a large pan to settle, which it speedily does; the solution after setting is ladled into a pan (malleable iron,) which may be made of cast iron, 6 ft. long, and 4 ft. broad. The solution is made to boil in this pan, and allowed to settle, it is then transferred into a large hemispherical pan, capable of holding 300 or 400 gallons, when it is brought down to about crystallizing strength. When the solution has become dense enough to crystallize, about three times its bulk of water is run in upon it, whilst boiling, the solution being constantly stirred. By this treatment, a considerable quantity of pyroligneous matters may be skimmed off as fast as they rise to the surface; when they are removed, the evaporation goes on as before. If the solution be still too much colored, another dose of water must be given. A little practice soon enables us to know where the evaporation should be checked. The ordinary method is, to rinse a ladle (which is used to skim off the tar from the solution) through the liquid, and observe how many drops of solution fall from it before the solution takes a stringy appearance; if only ten or twelve fall, then it is strong enough. The liquid is now ladled out into malleable iron pans, 5 ft. long by 3 ft. broad, and about six inches deep, the sides being bevelled, or sloping outwards, from below upwards, to crystallize. After becoming sufficiently firm, the sugar of lead is taken out by inverting the pan on a cloth. The pots used in the above process are heated only at the bottom.—*A. P. Halliday.*

Manufacture of the White Acetate of Lead.—This is prepared by dissolving litharge in acetic acid; the acetic acid is first placed in a vessel, and the litharge added by degrees, well stirring the mixture until the solution does but lightly redden the litmus paper; a quantity of water, equal to about one half the acid employed, is then run into the lead solution; heat is then applied, and the mixture slowly evaporated for about twelve hours, or until it has acquired a density of about 1.500. During evaporation any impurities which rise to the surface are skimmed off, and when the solution has acquired its proper density it is run off into the crystallizing pans. When the mass of crystals has become sufficiently hard to allow of its removal *en masse* from the crystallizers, it is drained and placed on wooden racks in the drying house, and when dry cleaned and broken up into fragments for the market.

The mother-liquor, containing neutral and basic acetates of lead and other metallic salts, may either be treated with vinegar, evaporated, recrystallized, and the residue employed as washings in subsequent operations, or it may be decomposed by carbonate of soda or lime, and used as carbonate of lead, or dissolved in acetic acid, and the supernatant acetate of soda or lime recovered.

The vessels employed in the manufacture of acetate of lead are in most cases made of lead. In Wales the mixing pans are of lead, three-quarters of an inch thick, seven feet long, by four and a half feet wide, and one foot deep. These pans are set on iron plates over arches, and the fire-places are outside the building in order that the acetate may not be darkened by the sulphurous vapors from the coal. The crystallizing pans are of wood lined with thin copper, and are about four feet long by two feet wide, and from six to eight inches deep, sloping inwards at the edges. At Pitchcombe the mixing and crystallizing vessels are both of copper, having a strip of lead soldered down the sides and across the bottom of the vessel to render the copper more electro-negative, there is thus no action on the copper from the acetic acid. Great care is requisite in the drying of the sugar of lead; the temperature of the drying house should not exceed 90° Fah. In Wales the heated air of a stove placed outside the drying house is conveyed through pipes passing round the interior; at other places steam heat is employed for this purpose, which is much to be preferred on account of its being more easily regulated.

We now come to speak of the product of sugar of lead from a given quantity of litharge. 112 lbs. of good Newcastle litharge should produce 187 lbs. of sugar of lead by the employment of 127 lbs. of acetic acid of sp. gr. 1.057, but not more than 180 lbs. is obtained in practice. The quantity of produce given in Ure's *Dictionary of Arts and Manufactures* and in other works, is evidently a misprint, being almost three times the weight of the litharge employed. A manufacturer of sugar of lead would indeed be fortunate who could obtain such a return. In one works in Wales, a ton of Welsh litharge produces, with the acid obtained from one ton of acetate of lime, from twenty-eight to thirty cwt. of sugar of lead; and in another manufactory one ton of best Newcastle litharge, with the acid from one ton and a half of acetate of lime, produces thirty-three cwt. of acetate.

The following process with metallic lead, recommended first by Berard, is easily executed, and it is said by Runge to yield a good product with great economy. Granulated lead, the tailings in the white lead manufacture, &c., are put in several vessels (say eight) one above the other, on steps, so that the liquid may be run from one to the other. The upper one is filled with acetic acid, and after half-an-hour let off into the second, after another half-hour into the third, &c., and so on to the last or eighth vessel. The acid causes the lead to absorb oxygen rapidly from the air, evolving heat, so that when the acid runs off from the lowest it is thrown on the upper vessel for the second time, it forms a certain quantity of acetate of lead in solution, and after passing through the whole series is so strong that it may be evaporated at once to crystallize. There are two points of importance in this manufacture; whatever method may be pursued, they are to employ a strong acid, that less time and acid may be lost in concentrating the liquid, and to keep the solution always acid, to prevent the formation of a basic salt.

It may not be amiss to call attention here to a process patented about ten years since for preparing acetate of lead and other acetates. This process consists in employing the acid in a state of vapor, to act upon the bases, instead of using it in the liquid form. A vessel is provided of adequate capacity for the quantity of acetate required, and, constructed of such material as will not be readily destroyed by the acid. The top of this vessel is closed hermetically by a cover, fastened down by any convenient means, and in the lower part of the vessel is placed either a minutely perforated false bottom, or a coiled tube of several convolutions, minutely perforated, to permit vapor to pass through freely. To prevent the loss of acid, there is also placed, at different degrees of elevation, several perforated diaphragms, similar to the false bottom just mentioned, on each of which is spread a layer of litharge, after which the cover of the vessel is to be accurately closed. By means of an ordinary distillatory apparatus, liquid acetic acid (strong or weak, pure or impure) is converted into vapor, which vapor is conducted by means of a pipe into the convoluted perforated pipe before mentioned, or between the real bottom of the vessel and the perforated false bottom; hence the vapor passing through the numerous perforations of the false bottom and diaphragms, diffuses it-

self throughout every part of the vessel, its acid entering into combination with the base employed, and forming the acetate, which falls to the bottom of the vessel, and in its descent meets with the ascending streams of vapor, the acid of which renders it perfectly neutral; meanwhile the more aqueous parts of the vapor become liberated, and maintaining their temperature ascend, and in their passage through the successive layers of the base are thereby deprived of their remaining acid. The vapor thus reduced to simple steam is allowed to escape through one or more pipes at the top of the vessel; and as this steam still maintains a boiling temperature, it is conducted through a worm to evaporate the acetate, or the mother-liquor by its heat. The distillation of the acid is continued until the acetate in the vessel is arrived at the proper degree of concentration for crystallization, which is easily ascertained by examining a small quantity drawn off by a cock at the bottom of the vessel, by which cock the whole contents are discarged when the operation is completed.

As the operation draws to its close, by nearly all the base having combined with the acid, the vapor issues out of the vessel charged with a certain portion of acid; and in order that no loss may be sustained by its escape into the atmosphere, it is conducted into another vessel prepared like the first mentioned, but charged superabundantly with the base, to take up every particle of the acid issuing out of the first vessel, until the operation in that first vessel is ended. As the temperature of the solution of the acetate can never exceed that of the vapor, the crystalline product is of fine quality.

Manufacture of Acetic Acid.—In treating of the manufacture of acetic acid we shall not enter upon any other processes than those of the decomposition of the acetates, as effected either by heat or by sulphuric acid.

Acetic Acid obtained by Decomposition of the Acetates by means of Heat—Aromatic Vinegar.—We have already mentioned, whilst speaking of the production of pyro-acetic spirit, that when the acetates are submitted to dry distillation, acetic acid is produced. The following is another extract from the table then quoted, showing the quantity of acetic acid obtained by the decomposition of the metallic acetates:—

Acetate of silver	. . . .	107.309
" copper	. . . .	84.868
" nickel	. . . .	44.731
" iron	. . . .	27.236
" lead	. . . .	3.045
" zinc	. . . .	2.258
" magnanese	. .	1.285

The crystallized acetate of copper is the salt most usually employed for this purpose—twenty pounds of the powdered acetate are placed in an earthen retort of the capacity of about two gallons, previously luted and exposed to the action of the fire; the elongated neck of the retort is connected with a tubulated receiver, and this with a second and third, the last of which is furnished with a Welter's safety tube, dipping into water. The heat must at first be carefully applied, then gradually increased, and the operation regulated by the developement of the gaseous products, which must not be too slow, or too fast. The receivers must be kept cool. When on increasing the heat it is found that no more vapors are given off, the fire must be put out, and the apparatus left to cool. The acid thus obtained has a greenish color, its specific gravity is 1.061. From 20 pounds of acetate of copper rather more than 9¾ pounds of rough acid are obtained. The residum in the retort consists of 6½ pounds of copper in a metallic state, mixed with a small quantity of charcoal. The crude acid thus obtained is next placed in a glass retort of the capacity of about 1½ gallon to which is adapted a tubulated receiver, and the retort is heated by means of a sand-bath. The first portions which come over are very weak, and the product should be kept separate until it comes over of a density of 1.072; the whole of the remaining product is now collected together, and the distillation continued to dryness. The acid obtained shows a specific gravity of 1.088. The weaker products are redistilled, and the stronger portions mixed with the former. The 9¾ pounds of crude acid furnish in this way six pounds of pure acid, specific gravity 1.085, three pounds at specific gravity 1.042, and half a pound specific gravity 1.023. The small portion of acetone which comes over with the acid imparts an agreeable aroma to it, and the addition of camphor and essential oils constitutes the aromatic vinegar of commerce.

Manufacture of Acetic Acid by the Decomposition of Acetate of

Soda by Sulphuric Acid.—Any given quantity of crystallized acetate of soda is placed in a copper still, and a hollow place having been made in the mass of the crystals, a quantity of strong sulphuric acid, equivalent to 34 or 35 per cent. of the weight of the acetate of soda employed, is then poured in at once, the crystals forming the sides of the heap in the still are then pushed down into the acid, and the whole stirred with a long broad wooden spatula; the head is then put on and luted, and the connexion made with the refrigerator. Nearly four cwt. of acetic acid, of specific gravity 1.050, may thus be obtained from 3 cwt. of acetate of soda, which only requires to be passed through a calico filter (of the form described in Mohr and Redwood's *Practical Pharmacy*, page 203, fig. 211) [fig. 193, page 191, Amer. edit.] on which some animal charcoal had been placed, to fit it for the market. A small quantity of acetic ether is often added to flavor it.

The still employed should be of stout copper (the solder used in its construction should be silver solder,) having its lower half set in an iron jacket, which either receives the high-pressure steam to be used as the heating medium, or contains oil, tallow, or fusible metal, according as either of these substances may be preferred for use. In the former case a cock is placed at the lower part of the casing to let off the condensed steam from time to time; and in the latter case the iron jacket is placed over the fire, the contents of the still receiving sufficient heat from the heated tallow, oil, or metal with which the copper is still in contact. A safety tube should be attached to permit the rise and escape of the heated oil, &c., should the temperature be raised too high.

The head of the still is of earthenware, and an earthenware, silver, or block tin worm may be employed to condense the acid vapor, according to the supply of water which can be obtained for condensation; or a series of Woulfe's stone-ware receivers, of about twenty gallons each, one-third full of water, may be connected with the earthenware head of the still. In this latter case, at the close of an operation, the acid in the first receiver will be found to be stronger than the second, the second than the third, &c., and if the union of the contents of the whole series will not furnish an acid of the strength required, the stronger portions may be drawn off from the first and second receivers, and the weaker portions in the third and fourth receivers may be placed in the first and second

for the next operation. A silver arm to connect the head with the earthenware worm is sometimes used, a regular supply of cold water being kept dripping on the metallic arm. The residuum left in the still after the distillation of the acid, is sulphate of soda, which should be in the state of an almost dry crystalline powder, when the process has been well conducted: this may be dissolved in water, and the solution filtered, evaporated, and crystallized; or it may be used in the manufacture of acetate of soda.

Manufacture of Glacial Acetic Acid.—Acetic acid may be obtained in a glacial state by using dry acetate of soda from which the water of crystallization has been expelled by heat; to this is added about its own weight of strong oil of vitriol, specific gravity 1.85. The first three-fifths of the product should be collected separately, the last, two-fifths will crystallize.

Manufacture of Acetic Acid by the Decomposition of Acetate of Lime by means of Sulphuric Acid.—Large quantities of this acid are employed in the manufacture of acetate of lead and other commercial acetates, white lead, and emerald green; also in the preparation of the inferior class of pickles, &c. &c. Much of the rough acid is sent from Wales to London, and purified by re-distillation. The rough acid is obtained in Wales and other parts of the country in the following manner:—A cast-iron cylinder, about four feet long and two feet wide, closed at one end, is fitted with an iron rod passing through its interior, and furnished with numerous projecting pieces of iron, which reach almost from the center rod to the inner sides of the cylinder. The other end of the cylinder is screwed on so as to be readily removed at any time when the cylinder is to be cleaned or repaired. This end is divided into two parts, one of which, occupying a space of about two-thirds of the whole, is fixed on the upper part, the other one-third is occupied by a moveable door, closing an aperture through which the contents of the cylinder may be removed; through this upper part one end of the iron rod above-mentioned passes, and is attached to a handle, by means of which a rotatory motion is communicated to the rod and its appendages, and the contents of the cylinder are kept in continual agitation. This vessel is termed an agitator. It is placed in a horizontal position on a mass of brickwork or masonry. At its upper part is an opening, through which the acetate of lime, sulphuric acid and water is passed; motion is given either by

steam or manual power. When the mixture is complete the door is opened, and the contents of the cylinder discharged into a tub or other vessel placed underneath the front of the cylinder. The pulpy mass is next transferred to shallow iron trays two feet wide and from two to four feet feet in length, and two inches deep. These are placed in cast-iron cylinders about five feet long and three feet wide, and each layer of trays is separated, the one from the other, by means of iron rods placed between them; the cylinders are exposed to the direct action of the fire, and the acetic acid passes off in the form of vapor, which is condensed by passing it through leaden worms immersed in cold water.

This impure acid, which is contaminated with sulphurous acid and free sulphur, produced by the re-action of the tarry matter of the acetate of lime or the excess of sulphuric acid, is then run into leaden vessels, placed in an iron cylinder and submitted to distillation. The liquid product is condensed by passing it through an earthenware worm. The acid in this state is employed in the manufacture of sugar of lead. Fifteen cwt. of brown acetate of lime, with seventy-five per cent. of sulphuric acid of specific gravity 1.770, and ten gallons of water, produce about 1500 pounds of rough acid of specific gravity 1.070. Sometimes a larger quantity of water is employed. On a small scale the following results were obtained:—

Acetate of Lime. lbs.	Sulphuric Acid. lbs.	Water. lbs.	Acetic Acid lbs.	Specific gravity.
12 Grey	9	15 produced	21½	1.056
12 "	9	10 "	17	1.073
12 Brown	9	15 "	18	1.050

On the large scale, one ton and a half of rough acetic acid, of specific gravity 1.050, should be obtained from one ton of good acetate of lime, and three quarters of a ton of sulphuric acid. Acetate of lime may be so prepared, and the decomposition and rectifying processes so carried on, that the acid obtained is not readily distinguishable from that obtained from acetate of soda.

At some work copper stills, set over the naked fire are employed, and the acid is redistilled in copper stills, set in a sand heat. Iron stills of various sizes, with a flat cover, formed of magnesian lime stone, or of rough burnt clay, or of metallic tin, are also used. Large stills are not desirable, because towards the end of the dis-

tillation, decomposition of the acetic acid is readily effected, in consequence of the destruction which a portion of the mass in contact with the bottom undergoes, whilst all the acid contained in it is being driven off. The distillation should be begun with a gentle fire, and should be carried on without much increasing the heat.—*Lond. Pharm. Jour. December* 1, 1850.

ORSERVATIONS ON ETHERIFICATION.

By Thomas Graham, F.R.S., F.C.S., &c.

In the ordinary process of etherizing alcohol, by distilling that liquid with sulphuric acid, two distinct chemical changes are usually recognized; namely, first, the formation of sulphovinic acid, the double sulphate of ether and water; and, secondly, the decomposition of the compound named, and liberation of ether. The last step, or actual separation of the ether, is referred to its evaporation, in the circumstances of the experiment, into an atmosphere of steam and alcohol vapor, assisted by the substitution of water as a base to the sulphuric acid, in the place of ether. The observation, however, of M. Liebig, that ether is not brought off by a current of air passing through the heated mixture of sulphuric acid and alcohol, is subversive of the last explanation, as it demonstrates that the physical agency of evaporation is insufficient to separate ether. Induced to try whether ether could not be formed without distillation, I obtained results which appear to modify considerably the views which can be taken of the nature of the etherizing process.

The spirits of wine or alcohol always employed in the following experiments, was of density 0.841, or contained 83 per cent. of absolute alcohol.

Expt. 1.—One volume of oil of vitriol was added to four volumes of alcohol, in a gradual manner, so as to prevent any considerable rise of temperature. The mixture was sealed up in a glass tube, one inch in diameter, and 6.6 inches in length, of which the liquid occupied 5.2 inches, a space of 1.4 inch being left vacant, to provide for expansion of the liquid by heat. The tube was placed in a stout digester containing water, and safely

exposed to a temperature ranging from 284° to 352° (140° to 178° C.) for one hour.

No charring occurred, but the liquid measured on cooling 5.25 inches in the tube, and divided into two columns, the upper occupying 1.75 inches, and the lower 3.5 inches of the tube. The former was perfectly transparent and colorless, and on opening the tube, was found to be ether, so entirely free from sulphurous acid, that it did not affect the yellow color of a drop of the solution of bichromate of potash. The lower fluid had a slight yellow tint, but was transparent. It contained some ether, but was principally a mixture of alcohol, water, and sulphuric acid. The salt formed by neutralizing this acid fluid with carbonate of soda, did not blacken when heated, from which we may infer that little or no sulphovinic acid was present.

The principal points to be observed in this experiment are its entire success as an etherizing process, without distillation, without sensible formation of sulphovinic acid, and with a large proportion of alcohol in contact with the acid, namely, two equivalents of the former nearly, to one of the latter. When the proportion of the alcohol was diminished, the results were not so favorable.

Expt. 2.—A mixture of one volume of oil of vitriol and two volumes of alcohol, sealed up in a glass tube, was heated in the same manner as the last. The liquid afterwards appeared of an earthy-brown color by reflected light, and was transparent and red by transmitted light. Only a film of ether was sensible after twenty-four hours, floating upon the surface of the dark fluid.

Expt. 3.—With a still smaller proportion of alcohol, namely, one volume of oil of vitriol with one volume of alcohol, which approaches the proportions of the ordinary etherizing process, a black, opaque liquid was formed at the high temperature, thick and gummy, without a perceptible stratum of ether, after standing in a cool state.

Crystals of bisulphate of soda, containing a slight excess of acid, were found to etherize about twice their volume of alcohol in a sealed tube quite as effectually as the first proportion of oil of vitriol, when heated to the same temperature. The two liquids found in the tube were colorless, no sulphurous acid appeared, and only a minute quantity of sulphovinic acid. Crystals of bi-

sulphate of soda, which were formed in an aqueous solution, and without an excess of acid, had still a sensible but much inferior etherizing power.

Expt. 4.—A mixture was made of oil of vitriol with a still larger proportion of alcohol, namely, one volume of the former and eight of the latter, or nearly one equivalent of acid to four equivalents of alcohol. This mixture was sealed up in a tube, and heated for an hour between 284° and 317° (140° and 158° C.) which appeared sufficient for etherizing it. A second exposure for another hour to the same temperature did not sensibly increase the ether product. The column of ether measured 1.25 in the tube, and the acid fluid below 2.5 inches. Both fluids were perfectly colorless.

It thus appears to be unnecessary to exceed the temperature of 317° (158° C.) in this mode of etherizing, and that the proportion of alcohol may be increased to eight times the volume of the oil of vitriol without disadvantage.

Expt. 5.—The proportions of the first experiment were again used, namely, one volume of oil of vitriol with four volumes of alcohol, and the mixture heated as in the last experiment to 317° (158° C.) The upper fluid, or ether, measured 1.1 inch in the tube, the lower fluid 2.65 inches. The latter had a slight yellow tint, like nitrous ether, but only just perceptible. It gave, when neutralized by chalk,—

Sulphate of lime, - - - - -	83.11 grains
Sulphovinate of lime - - -	4.91 "

The last salt was soluble in alcohol, and crystallized in thin plates.

Here again the formation of sulphovinic acid in a successful etherizing process is quite insignificant.

New results at 317°, from the other proportions of one volume of oil of vitriol with one and two volumes of alcohol, were quite similar to those obtained in experiments 2 and 8, at the higher temperature of 352°. In none of these experiments did there appear to be any formation of olefiant gas, and the tubes could always be opened, when cool, without danger.

Neither glacial phosphoric acid nor crystallized biphosphate of soda etherized alcohol to the slightest degree, when heated with

that substance, in a sealed tube, to 360° (182° C.). Even chloride of zinc produced no more, at the same temperature, than a trace of ether, perceptible to the sense of smell.

Expt. 6.—To illustrate the ordinary process of ether-making, a mixture was prepared, as usually directed, of

100 parts of oil of vitriol,
48 " of alcohol (0.841),
18.5 " of water.

This liquid was sealed up in a glass tube, and heated to 290° (143° C.) for one hour. It became of a dark greenish-brown color, and opalescent, with a gummy looking matter in small quantity. No stratum of ether formed upon the surface of the fluid.

The tube was opened, and the fluid divided into two equal portions. One of the portions was mixed with half its volume of water, and the other with half its volume of alcohol, and both sealed up in glass tubes and exposed again to 290° for one hour.

It would be expected, on the ordinary view of water setting free ether from sulphovinic acid, that much ether would be liberated in the mixture above, to which water was added. The ether which separated, however, amounted only to a thin film, after the liquid had stood for several days. In the other liquid, on the contrary, to which alcohol was added, the formation of the ether was considerable, a column of that liquid appearing, which somewhat exceeded half the original volume of the alcohol added. In fact, the sulphovinic acid was nearly incapable of itself of yielding ether, even when treated with water. But it was capable of etherizing alcohol added to it, in the second mixture, like bisulphate of soda or any other acid salt of sulphuric acid.

The conclusions which I would venture to draw from these experiments are the following:—

The most direct and normal process for preparing ether, appears to be, to expose a mixture of oil of vitriol, with from four to eight times its volume of alcohol of 83 per cent. to a temperature of 320° (160°C.) for a short time. Owing to the volatility of the alcohol, this must be done under pressure, as in the sealed glass tube. The sulphuric acid then appears to exert an action upon

the alcohol, to be compared with that which the same acid exhibits when mixed in a small proportion with the essential oils. Oil of turpentine mixed with one-twentieth of its volume of sulphuric acid, undergoes an entire change, being chiefly converted into a mixture of two other hydrocarbons, terebene and colophene, one of which has a much higher boiling point and greater vapor-density than the oils of turpentine. This hydrocarbon does not combine with the acid, but is merely increased in atomic weight and gaseous density, without any further derangement of composition, by a remarkable polymerizing action (as it may be termed) of the sulphuric acid. So of the hydrocarbon of alcohol; its density is doubled in ether, by the same polymerizing action. Chloride of zinc effects, with alcohol, at an elevated temperature, a polymeric catalysis of the latter, of the same character, but in which hydrocarbons are formed, of even greater density and free from oxygen.

This view of etherification is only to be considered as an expression of the contact-theory of that process which has long been so ably advocated by M. Mitscherlich.

The formation of sulphovinic acid appears not to be a necessary step in the production of ether; for we have found that the etherizing proceeded most advantageously with bisulphate of soda, or with sulphuric acid mixed with a large proportion of alcohol and water, which would greatly impede the production of sulphovinic acid. It appears, indeed, that the combination of alcohol with sulphuric acid, in the form of sulphovinic acid, greatly diminishes the chance of the former being afterwards etherized; for, when the proportion of oil of vitriol was increased in the preceding experiments, which would give much sulphovinic acid, the formation of ether rapidly diminished. The previous conversion of alcohol into sulphovinic acid, appears, therefore, to be actually prejudicial, and to stand in the way of its subsequent transformation into ether.

The operation of etherizing has attained a kind of technical perfection in the beautiful continuous process now followed. The first mixture of alcohol and sulphuric acid is converted into sulphovinic acid, the sulphate of ether and water, which acid salt appears to be the agent which polymerizes all the alcohol afterwards introduced into the fluid. Bisulphate of soda, with a slight

access of acid, acts upon alcohol in the same manner, and its substitution for the acid sulphate of ether would have a certain interest, in a theoretical point of view, although a change of no practical importance in the preparation of ether.

Sulphuric acid does not appear to be adapted for the etherizing of amylic alcohol. M. Balard, by distilling these substances together, obtained a variety of hydrocarbons, some of them of great density, but no ether. The polymerizing action of the sulphuric acid appears to advance beyond the ether stage. I have varied the experiment by heating amylic alcohol in a close tube, 350° (176° C.), with oil of vitriol, to which one, two, three, four, and even six equivalents of water had been added, without obtaining anything but the hydrocarbons of Balard. The formation of these was abundant, even with the most highly hydrated acid, and with a very moderate coloration of the fluid.—*London Pharmaceutical Journal*, Jan. 1851, from *Quarterly Journal of the Chemical Society*.

BABUL BARK.

Recently a sample of Babul or Babool bark (the bark of *Acacia arabica*) has been sent to this country from Calcutta to ascertain if it will be likely to sell for tanning purposes. Some of the leather tanned on the banks of the Ganges with this bark is but little inferior to our oak-bark tanned leather; but there is reason to believe that the freight will be more than the bark will bear. In India, this bark is extensively used in tanning leather. The specimen which we have seen was in coarse, large, very fibrous quills, of a reddish color.—*Lon. Pharm. Journ.*, October 1850.

Varieties.

Presence of Iodine in Sarsaparilla. By M. A. GUILLIERMOND, Apothecary. —The experiments upon the presence of iodine in sundry plants, as recently published by Prof. Chatin, have induced me to inquire whether sarsaparilla did not owe its anti-syphilitic qualities to the presence of this substance among its constituents. The peculiar odor of the decoction, also, having frequently struck me, I conceived the idea, which has been confirmed by chemical analysis. My mode of procedure was as follows:

Five hundred grammes of Honduras sarsaparilla were incinerated and washed with water, which liquid was then evaporated to dryness, giving an alkaline product which was digested in alcohol. Upon the application of the usual tests for iodine, its presence, in considerable quantity in the state of iodide of potassium was evident. I found no iodine in the root, after it had been exhausted with water, although I found it present in the extract; thus proving that it passes into the aqueous preparations of sarsaparilla in the state of a soluble salt.

It is reasonable to suppose that these results are not unimportant in a therapeutic point of view. They confirm the opinion offered by M. Chatin upon the presence of iodine in plants employed as anti-scrofulous remedies.

This fact being acknowledged it would prove interesting to ascertain the connection existing between the amount of iodine contained in these plants, and the greater or less activity attributed to them. Sarsaparilla may yet become a valuable auxiliary, and in certain cases even a succedaneum of iodide of potassium.—*L'Abeille Medicale, January 15th,* 1851, *from Gazette Médicale de Lyons.*

Conia, Sulphate of Cadmium, &c., in certain Ophthalmic Affections.— We find in the oculistic annals some new formulæ, by Dr. Fronmuller Conia, the active principle of cicuta (*conium maculatum,*) has, according to the author, given some surprising results. He employs it in scrofulous ophthalmia, accompanied by "blepharospasmes" and intolerance of light, and recommends the following recipe:

Take of Conia 20 centigrammes,	(2 parts)
Distilled Water 20 grammes,	(200 ")
Alcohol 13 decigrammes,	(13 ")

access of acid, acts upon alcohol in the same manner, and its substitution for the acid sulphate of ether would have a certain interest, in a theoretical point of view, although a change of no practical importance in the preparation of ether.

Sulphuric acid does not appear to be adapted for the etherizing of amylic alcohol. M. Balard, by distilling these substances together, obtained a variety of hydrocarbons, some of them of great density, but no ether. The polymerizing action of the sulphuric acid appears to advance beyond the ether stage. I have varied the experiment by heating amylic alcohol in a close tube, 350° (176° C.), with oil of vitriol, to which one, two, three, four, and even six equivalents of water had been added, without obtaining anything but the hydrocarbons of Balard. The formation of these [illegible] with the most highly hydrated acid, and with

BABUL BARK.

Recently a sample of Babul or Babool bark (the bark of *Acacia arabica*) has been sent to this country from Calcutta to ascertain if it will be likely to sell for tanning purposes. Some of the leather tanned on the banks of the Ganges with this bark is but little inferior to our oak-bark tanned leather; but there is reason to believe that the freight will be more than the bark will bear. In India, this bark is extensively used in tanning leather. The specimen which we have seen was in coarse, large, very fibrous quills, of a reddish color.—*Lon. Pharm. Journ.*, October 1850.

Varieties.

Presence of Iodine in Sarsaparilla. By M. A. GUILLIERMOND, Apothecary. —The experiments upon the presence of iodine in sundry plants, as recently published by Prof. Chatin, have induced me to inquire whether sarsaparilla did not owe its anti-syphilitic qualities to the presence of this substance among its constituents. The peculiar odor of the decoction, also, having

thus proving that it passes into the aqueous preparations of sarsaparilla in the state of a soluble salt.

It is reasonable to suppose that these results are not unimportant in a therapeutic point of view. They confirm the opinion offered by M. Chatin upon the presence of iodine in plants employed as anti-scrofulous remedies.

This fact being acknowledged it would prove interesting to ascertain the connection existing between the amount of iodine contained in these plants, and the greater or less activity attributed to them. Sarsaparilla may yet become a valuable auxiliary, and in certain cases even a succedaneum of iodide of potassium.—*L'Abeille Medicale, January 15th,* 1851, *from Gazette Médicale de Lyons.*

Conia, Sulphate of Cadmium, &c., in certain Ophthalmic Affections.— We find in the oculistic annals some new formulæ, by Dr. Fronmuller Conia, the active principle of cicuta (*conium maculatum,*) has, according to the author, given some surprising results. He employs it in scrofulous ophthalmia, accompanied by "blepharospasmes" and intolerance of light, and recommends the following recipe:

Take of Conia 20 centigrammes,	(2 parts)
Distilled Water 20 grammes,	(200 ")
Alcohol 13 decigrammes,	(13 ")

to be used several times during the day in frictions around the orbits. Mr. Fronmuller also mentions having obtained very favorable results from the use of sulphate of cadmium, used according to the following formula as a collyrium in cases of opacity of the cornea:

Take of Sulphate of Cadmium 20 centigrammes, (2 parts)
Rosewater 45 grammes, (450 ")
Rousseau's or Sydenham's Laudanum according to circumstances, 2 to 6 grammes, (20 to 60 ")

This author also recommends the use of Tannin in collyrium and ointment, preferring it to the mineral agents usually employed; as better supported, and as producing more energetic contraction of the vascular tissue. The following is the formula he proposes for the ointment:

Take of Tannin 40 to 60 centigrammes, (4 to 6 parts)
Washed Lard 25 decigrammes, (25 parts)
Mix.

For the Collyrium,

Take of Tannin 30 to 60 centigrammes, (3 to 6 parts)
Distilled Water 60 grammes, (600 parts)
Rousseau's* Laudanum 2 to 4 grammes, (20 to 40 p.)
Mix.

Journ. de Pharm., from Annales Oculistique.

On the Constitution of Conia. By M. R. Wagner.—From the experiments of Mr. Blyth, it appears that, under the influence of oxidizing agents, conia furnishes butyric acid. This reaction expressed by the formula $C^{16}\,H^{15}\,Az. + 4HO + 4O = C^{8}\,H^{8}\,O + Az.\,H^{3}$ has induced Mr. Wagner to propose a hypothesis upon the constitution of conia. Founding his impressions upon the ideas of Mr. Hoffman, relative to the constitution of amidogen bases, (*bases amidées,*) (biethylamine, &c.,) the author thinks conia to be ammonia, in which two equivalents of hydrogen are replaced by two equivalents of butyryle $C^{8}\,H^{7}$. The constitution of this volatile base is consequently expressed by the formula

$$C^{16}\,H^{15}\,Az. = \left.\begin{matrix} C^{8}\,H^{7} \\ C^{8}\,H^{7} \\ H \end{matrix}\right\} Az.$$

Jour. de Pharm. from Jour. far Prackt. Chem.

Sophisticated Pepper.—The sanitory commission, charged by the English Journal, the *Lancet*, to examine into the state of the alimentary substances found in commerce, report that the samples of pepper bought of the London spice dealers were contaminated by the admixture of mustard and flaxseed.

* The Abbe Rousseau's Laudanum or drops, is a wine of opium prepared by fermentation, and highly charged with the active principles of the drug, being about four times the strength of the laudanum of the U. S. P., *i. e.* containing one grain of opium to every six drops.

As pepper pays in England a duty of 60 centimes (12 cents,) per pound, and the quantity sold exceeds by a million of pounds that upon which duty has been paid, it follows that the English treasury loses annually, thanks to these pilferers, the trifle of 600,000 francs, ($120,000.) But this is comparatively nothing to the loss caused by the frauds in coffee, amounting to at least 25,000,000 francs ($5,000,000,) annually!—*Journ de Pharm, from Gazette Medicale.*

Culture of Tea in Brazil.—Late letters from Rio de Janeiro agree in announcing the growing progress of the tea culture in Brazil. Many of the planters, they say, have given up the culture of coffee, to undertake that of tea, and it is very probable that ere long Brazil will be enabled to produce not only sufficient of the herb for her own consumption, but also for export. Bohea, hyson, and young hyson are the kinds which seem best adapted to the country.—*Jour. de Pharm.*

On a New Source of Carbonate of Magnesia—By M. Landerer.—In different localities upon the island of Euboa, in the strata of serpentine, there is found an abundance of a hard white rock, which on account of its physical properties has been called by the inhabitants, leukolite, (λευκόλιθος) or white-stone.

The owner of the land supposing this mineral a kind of porcelain clay, exported a considerable quantity of it to England, for the purpose of manufacturing porcelain. In attempting to convert it to this use it was soon perceived that, being in no respect of an argillaceous nature, it was totally unfit for such a purpose, but that it was a magnesite, or more correctly speaking a hydro-magnesite, $\dot{M}g\ddot{O},CO^2+HO$, which, as I have just learned, is employed with great advantage for the manufacture of carbonate of magnesia.

The magnesite of Euboa is very white, extremely hard, dissolving in sulphuric and muriatic acids, and evolving carbonic acid gas when exposed to heat. It contains magnesia 48, carbonic acid 36, water 14, and traces of carbonate of lime, oxide of iron and of manganese.

To succeed in the preparation of carbonate of magnesia, it is best to dissolve the magnesite in hydrochloric acid, and precipitate the solution of muriate of magnesia, by the carbonate of potassa or soda.

I do not doubt that this mineral which is plentifully obtained, may be advantageously employed in the manufacture of artificial tiles, resembling fire-brick, for the construction of furnaces.—*Jour. de Pharm., Mars,* 1851.

Massachusetts College of Pharmacy.—The annual meeting of the Massachusetts College of Pharmacy, for the choice of officers, was held at the Tremont House, Boston, on Wednesday, the 19th of March. A number of new members were admitted, and the following gentlemen were chosen the officers for the ensuing year:

Thomas Farrington, *President*; Joseph Burnett, *Vice President;* Henry Ware Lincoln, *Secretary;* Samuel N. Brewer, *Treasurer;* Joseph Kidder, *Auditor;* William A. Brewer, *Corresponding Secretary;* William Brown, Henry D. Fowle, Andrew Geyer, Ashel Boyden, *Trustees.*

The following gentlemen were chosen a committee to consider what measures were necessary to increase the usefulness of the college to its members, and the public, and report at a future meeting:—Dr. George F. Jones, Joseph Burnett, S. M. Colcord, W. B. Little, G. W. Parmenter. Subsequently the President and Secretary were added to the committee.

The meeting was well attended, and remarks were made by several of the of the members; and an interest was exhibited which guarantees continued strength to the institution, and its usefulness to the community.

Voted, That the proceedings be published in the Boston Medical and Surgical Journal. Per order, HENRY WARE LINCOLN, *Secretary.*

Boston Med. and Surg. Journ., March 26.

Northern Dispensary, New York.—From the Annual Report of the Trustees of the Northern Dispensary of the City of New York, to the Legislature of the State, we learn that—

"During the year 1850, their dispensary has furnished medical attendance and medicine to 19,047 individuals as recipients of their institution, of whom 8,090 were attended at their dwellings, and 10,957 were attended at the dispensary. Of these individuals, 5,140 were born in the United States, 12,680 in Ireland, 480 in England, 317 in Scotland, 281 in Germany, 149 in other countries. 615 of the above mentioned individuals were vaccinated."—*Boston Med. and Surg. Jour., March* 26, 1851.

On the Health of Workmen Employed in the Manufacture of Sulphate of Quinine. By M. A. CHEVALLIER.—The manufacture of sulphate of quinine, which has been carried on for thirty years in France, occasions with some of the workmen particular diseases, which have not hitherto been studied. Having become acquainted with this fact, I made several investigations on the subject; from which it appears that the workmen employed in this manufacture are subject to attacks of a cutaneous disease, which compels them to suspend their work for a fortnight, or sometimes for a month or longer. Some of them are even compelled to seek other employment.

M. Zimmer, manufacturer of sulphate of quinine, at Frankfort, has found that the workmen employed in powdering cinchona bark are attacked with a fever which he has designated the *cinchona fever* (China fieber.) This malady is sufficiently severe to induce those attacked by it to renounce the occupation and leave the manufactory. This disease has not been observed in France.

At present no means are known for preventing the cutaneous disease. It affects not only the workmen who are employed in the different operations, but it also attacks persons who are merely exposed to the emana-

tions from the factory. The sober and the intemperate are alike subject to it.

It has not been established that causes exist which predispose the workmen to this disease, although some persons consider such to be the case.—*Pharmaceutical Journal, February* 1, 1851, *from Repertoire de Pharmacie.*

On Sea-Weeds as the Sources of Acetic Acid. By JOHN STENHOUSE, LL.D., &c.—During the course of some experiments on sea-weeds, Dr. Stenhouse ascertained that a considerable quantity of *acetic acid* was generated during their spontaneous fermentation in warm weather.

Six pounds of fresh, moist *Fucus vesiculosus* were put into an earthen jar with a little quick lime and just sufficient water to cover them, and kept for three weeks at the temperature of 96° F., adding small quantities of quick lime from time to time, to keep the mixture slightly alkaline. When the fermentation was completed, the liquid portion, which contained a good deal of mucilage and some acetate of ammonia, was thrown upon a cloth filter, and the clear liquid which passed through was evaporated to dryness, and then cautiously heated so as not to decompose any of the crude acetate of lime, while almost the whole of the mucilaginous matter was rendered insoluble. The dark brown mass yielded by digestion in water and evaporation, 4 oz. 2 drachms of dry acetate of lime, nearly free from organic matter, from which 696 grains of anhydrous acetic acid diluted with water were obtained, which is equivalent to 1.65 per cent of acetic acid from the moist weed.

Two other experiments somewhat varied gave 1.45 and 1.15 per cent. of acetic acid:—the latter trial was in the open air subject to atmospheric variations, from June to September. Dr. S. thinks the residue will answer nearly as well for manure as the weeds before fermentation.—*Pharm. Jour., Feb.*, 1851, *from Philosophical Magazine.*

Mites in Sugar.—In the Pharmaceutical Journal, for February, we find a figure of the *mite* peculiar to brown sugars, and which exists in considerable numbers, in some varieties, both dead and alive. A writer in the Lancet for January 18th, 1851, states, that of thirty-six samples of sugar examined, "The *disgusting looking acari were present in thirty-five.*" The *cheese, meal* and *itch* mites are also figured, and in the enlarged view present a formidable appearance.

Coffee and its Adulterations.—The London *Lancet*, within a few months past, has been publishing a series of experimental examinations of the more prominent articles of diet as found in the London shops and markets, more especially those sold by the grocers. The first of them is coffee. The structure of the coffee berry is first described very minutely, showing it to consist of angular cells closely adherent together, and enclosing an essential oil on the presence of which the fragrance and some of the active qualities of

the coffee depend. Now as roasting the coffee does not alter the structure of the tissues, an experienced microscopist can, by examining a specimen of ground coffee, decide on the presence or absence of cellular tissue of a foreign character, and by knowing the structural characteristics of the substances used as adulterations, can detect them when present.

Thirty-four specimens of coffee, obtained from different parties in London among the grocers, tea and coffee dealers, were examined with the following results, viz:

"1st. That the thirty-four coffees, with the exception of three were adulterated. 2d. That *chicory* was present in thirty-one instances. 3d. Roasted corn in twelve. 4th. Beans and potato flour, each in one case. 5th. That in sixteen cases the adulteration consisted of chicory only. 6th. That in the remaining fifteen samples, the adulteration consisted of chicory, and either roasted corn, beans, or potatoes. 7th. That in many instances the quantity of coffee was very small; and in others not less than one-fifth, one-fourth, one-third, one-half, and so on, of the whole article."

The Lancet gives the microscopic characteristics of the substances used in adulterating coffee, but they are too long for introduction here.—*Extracted from Pharm. Journal, Feb.*, 1851.

On Arnicina. By Mr. William Bastick.—Arnica montana, although not extensively used in this country, is held in high estimation by the medical profession in Germany as an effective remedial agent. It is known to exercise a powerful and defined action on the animal economy. The flowers, and other parts of this plant, have several times been chemically examined, and their virtues have been generally ascribed to an acrid resin which they contain. But there has been much doubt expressed as to whether this resin was really the active principle, for Professor Pfaff, of Kiel, observes, "Arnica flowers is one of those agents whose chemical composition, and therapeutic powers which depend on the former, are enveloped in obscurity."

Dr. A. T. Thompson has recorded his belief that he had detected igasusurate of strychnine in the flowers. This statement induced Versemann, at the suggestion of Pfaff, to institute an inquiry by direct experiment as to its correctness. The result was that he has proved the absence of any compound of strychnine in them. My experiments bear testimony to the truth of his conclusion in this matter, while I differ entirely from him in another one, that in which he denies the existence of any alkaloid in this plant. But it is not altogether surprising that he should have overlooked the presence of an organic base in it, for he proceeded in his research upon the assumption that if arnica contained an alkaloid it would be precipitated from its solution by ammonia. This failure of Versmann to eliminate the organic base of arnica is an evidence as to the necessity of, as I have previously remarked, Pharmaceutists using the improved methods in their nvestigations.

The flowers of the Arnica montana being that part of the plant in which its medical properties are said to be the most predominant, were selected for examination.

They were subjected precisely to a similar process to that by which lobelina was extracted from lobelia inflata, the result of which was the elimination of an organic base, arnicina. This substance has a strong alkaline reaction. It combines with acids, forming a series of salts. When exposed to a high temperature it suffers decomposition, and leaves a carbonaceous residuum, consequently it is not volatile. I have not yet been able to ascertain whether it is crystallizable, in consequence of the smallness of the product which the flowers yielded, but, as far as can be judged from its condition when obtained by evaporation from the ethereal solution, it has a disposition to assume that form. To the taste it is slightly bitter, but not acrid, and has the odor of castor. From the aqueous solutions of its salts it is precipitated by tincture of galls in somewhat dense flocks. It is slightly soluble in water, but much more so in alcohol and ether. When subjected to the action of caustic alkalies it is decomposed.

The hydrochlorate of arnicina, after being freed from its coloring matter by animal charcoal, forms stellated acicular transparent crystals.

What are its peculiar therapeutic properties is a question that must remain for the skill of the physiologist to determine. This base, doubtless, deserves a more complete examination than it has received, but this task can only be accomplished by operating on a large quantity of the flowers, as independently of the small per centage of arnicina which the flowers primarily contain, much of it is unavoidably lost in each step of the process for its eduction.—*Pharm. Journ. February*, 1851.

Eau de Cologne. By Professor Varrentrapp.—This well-known perfume is a solution of different volatile oils in pure strong spirit. The principal condition for the preparation of a fine water, is the employment of a spirit quite devoid of fusel-oil (oil of grain) and of all foreign odor.

In respect to the proportion and kind of oils employed, we have numerous formulæ. It is of importance that these oils, which are usually purchased of the druggists of the South of France, should be of the finest quality, and and that no oil should be used in sufficient quantity to allow of its peculiar odor being recognisable in the mixture. The oils are to be dissolved in spirit, and the mixture allowed to stand for some weeks (or still better for some months) to improve its odor. Distillation does not effect this; on the contrary, a fresh distilled water requires to be kept a much longer time. Distillation is indeed objectionable, for on account of the greater volatility of the spirit, the oils in part remain behind in the still. Distillation can improve the odor only when the less volatile oil has been used in too large a quantity, and we wish to obtain a better proportion. Before all things, we should employ a pure, old, strong spirit, and not too much of, nor a too strongly smelling, oil.

The different sorts of volatile oil which are obtained from varieties of citrons, oranges, and lemons, in different states of maturity, are the most important, and, therefore, it is most important to ascertain their purity and goodness.

Förster gives the following formula for the preparation of a fine Eau de Cologne: Take of rectified spirit of 82 per cent. of Tralles (=sp. gr. 0.855) 6 [wine] quarts; essence of oranges, essence of bergamot, essence of citron, essence of limette, and essence of petits grains, of each ℥j; essence of cedro, essence of cedrat, essence de Portugal, and essence de neroli, of each ℥ss; oil of rosemary, ℥ij; and oil of thyme, ℥j.

Otto gives the following formula for a good Eau de Cologne; Rectified spirit of 86 per cent. of Tralles (=0.846 sp. gr.) 200 [wine] quarts; oil of citrons, lb.iv; oil of bergamot lb.ij; oil of neroli ℈lb.; oil of lavender lb.ss; oil of rosemary, ¼lb., and spirit of ammonia, ℥ss. Mix.—*Pharm. Journal, March*, 1851.

Adulteration of Opium with Salep Powder.—A peculiar adulteration of opium was discovered by Landerer in preparing laudanum from an apparently very good opium, obtained direct from Smyrna. After several hours' digestion the tincture assumed a slimy or mucilaginous condition, and in a few days assumed a gelatiniform condition, and could not be poured out from the glass. By a careful examination, salep powder in large proportion was discovered in the opium; and the author was afterwards informed, that this is a very common adulteration, which is practiced in order to make the opium harder, and accelerate the process of drying it.—Buchner's *Repertorium*, Bd. vi. Heft. 3, p. 349.

[Dr. Pereira (*Elements of Materia Medica*, vol. ii., p. 1742, second edition) mentions a kind of opium which contained a gelatinous substance; and Mr. Morson (*Pharm. Journ.*, vol. iv. p. 503) has described an opium which yielded a bulky gelatinous-looking mass.—Ed. *Pharm. Journ.*]

The Copyright of a Pharmacopœia.—It is reported that "King and Queen's College of Physicians of Ireland" has assigned its interest in the Dublin Pharmacopœia to Dr. Apjohn, who has announced *his* intention of proceeding by injunction against all those who shall copy the work. This threat is levelled against the authors of Dispensatories, or other works on Materia Medica, containing the formulæ of the three colleges, placed in juxtaposition for the convenience of the medical practitioner, the dispenser, and the student. We have heard the names of three authors who are already singled out for attack. We understand that in the case of one of of these gentlemen (Dr. Neligan,) Dr. Apjohn served him with a notice a day or two before the appearance of the third edition of his "*Medicines, their Uses and Mode of Application*," warning him not to commit a "breach of the law," in introducing the alterations or additions of the new Dublin Pharmacopœia.

[In the last Edition of the United States Pharmacopœia, the Committee of Revision and Publication retained the Copyright of the work, in view of the possibility of a difficulty of the kind above noticed, so that its pages might be open to all medical writers and commentators.—Ed. *Amer. Jour. of Pharmacy.*

Statement of the Relative Produce of Taraxacum Root at Different Periods of the year.—Mr. Jacob Bell, in giving the following statement, observed, that it was not the result of experiments made for the purpose, but an average deduction from his laboratory-book during several years. The produce in November had sometimes been quite as great as that in October and December, although on the average it appeared to be less. The general result tended to confirm the opinion of Mr. Squire, stated in an early meeting of the Society, that the best time for making the extract is towards the end of the year, it being generally considered that the quality of the extract is the best when the root is in the greatest perfection, of which the amount of produce affords some criterion.

Produce of extract from 1 cwt. of taraxacum root:—

Jan.	Feb.	March	April	Aug.	Oct.	Nov.	Dec.
8½	6¾	6	5	6	9	8¼	9

The Chairman inquired whether it had been ascertained what the nature of the soil was from which the roots had been taken, in the several cases referred to in Mr. Bell's paper. He (Mr. Squire) had been accustomed to ascertain this point whenever it is practicable, for he thought it very important to collect exact data of this kind with reference to extracts. Much yet remained to be made out with reference to this class of preparations.

Mr. Davenport preferred using the roots which had been grown in a rich and highly cultivated soil.

Mr. Bell said he had not ascertained what kind of soil the roots had been taken from; indeed, he should feel little confidence in the accuracy of the representations made by herb-collectors. He could not account for the fact that the proportion of extract obtained from the root was smaller in November than in October or December, as he considered the root in perfection about November, after which time it was liable to deterioration in case of frost.

Dr. Radcliffe observed, that it had been found in many instances that the juices of plants take a downward direction in frosty weather, which might to some extent influence the quantity of extract obtained from the juice of the root in frosty weather.

The Chairman said, he had noticed that the juice of taraxacum root became more sweet in frosty weather. He considered the root to be in the best state for making extract when there was least of the plant above ground.

Mr. Cracknell thought November was the best month for collecting taraxacum root for making extract. The extract made at this period was less

deliquescent than that made at other seasons.—*Pharmaceutical Journal, March*, 1851.

Poisoning by Twenty-nine Grains of Veratria:—Recovery.—The following authentic case has been communicated to us, with a request that the name of the patient (a retired Chemist and Druggist) may be suppressed:—

A gentleman had a draught and liniment made up at the same time; the draught was to relieve the cholic, and consisted of chloric ether, &c. The liniment was composed of veratria gr. xxx., and rectified spirit ℥ij., and was intended to be rubbed on the forehead to relieve a nervous chronic pain in the head. The dispenser finding his stock of veratria insufficient, put only xxix grains of veratria in, and reduced the amount of spirit in proportion.

On his way home, feeling pain, the patient went into a tavern and got a glass of hot ale and ginger, and then called for a second, into which he put the *liniment*, supposing it to be the draught. Almost immediately afterwards he experienced a peculiar sensation of oppression and anxiety in the head, a sense of suffocation, and he then discovered his mistake. Medical aid was at hand; vomiting was produced by an emetic of sulphates of zinc and copper, tickling the throat, &c. In about half an hour after vomiting, very violent sneezing came on, and continued for about an hour; the patient then slept, and had no disagreeable sensation or symptom since.—*Pharmaceutical Journal, April*, 1851.

MINUTES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

At a Stated Meeting of the Philadelphia College of Pharmacy, held Third month 31st, 1851. Present 18 members.

Daniel B. Smith, President, in the chair.

The minutes of the last Stated Meeting were read and approved.

The minutes of the Board of Trustees were read, detailing their proceedings since last Stated Meeting.

Nineteen young gentlemen, having passed a satisfactory examination, and complied with the rules of the College, were declared graduates of the institution. [The names of the graduates were published in the last number of the Journal.]

Charles S. Rand was elected by the Board a resident member.

The Committee on the Adulteration of Drugs, &c., made the following Report, which was accepted, and the Committee discharged.

The Committee on Adulterated Drugs, &c., report, that they have during the past six months effected some little of the duty assigned them, in so far as they have published ten pages of contributions, towards the object in view, in the Journal, under the head, "On the means for determining the purity of certain Chemicals and Drugs, and for Detecting Adulterations." These contributions are from individual members of the Committee, and it has been thought the most practicable method of accomplishing the work, and attended with less inconvenience to the Committee, and less expense to the College. Should these essays accumulate in number and value, to make it an object, the College may, at some future time, direct them to be systematically arranged and published; meanwhile they will be available to the readers of the Journal.

Having accomplished all that their association as a Committee is likely to effect at present, they ask to be discharged.

DANIEL B. SMITH,
THOS. P. JAMES,
On behalf of the Committee..

The resolution offered at last meeting, by Alfred B. Taylor, relative to the election of Professor Thomas, was again introduced.

On motion, it was Resolved, That the rules be suspended.

The President appointed Wm. J. Jenks, teller, who reported that Prof. Robert P. Thomas had received a unanimous vote, whereupon he was declared a resident member of the College.

The following report was accepted and ordered to be placed on minute:

The Committee on the Sinking Fund report, that, since the Annual Meeting of the College last year, they have received $195, and paid $200 for two shares of College loan. The debt of the College being now only $2,100, the loan-holders are not willing to sell at less than the par value.

WARDER MORRIS,
SAMUEL F. TROTH,
JOSEPH C. TURNPENNY,
Committee on Sinking Fund.

Philadelphia, 3d mo., 1851.

The Annual Report of the Publishing Committee, accompanied by a statement of the receipts and expenditures of the last year, was read and approved, and is as follows:

TO THE PHILADELPHIA COLLEGE OF PHARMACY:

The Publishing Committee respectfully report: that since their last communication to the College they have printed and published five numbers of

the Journal, including the number for April, due to-morrow, and which is ready for delivery.

The general Index to the Journal, alluded to in their last report, was published with the April and July numbers, of last year, and extended to 56 pages of small type, double column. So far as they know it has been received with general satisfaction. Two hundred and fifty copies were reserved for future demand, and placed among the stock of the Journal.

Previously to the commencement of the current volume, it was determined to increase the amount of matter, without adding to the cost of the press-work, and with but a trifling addition to the previous expense of composition; which was effected by enlarging the page slightly, and by throwing all the small articles under the general head of "Varieties," and in smaller type, so as to avoid loss of space by headings. By this arrangement nearly one-fifth more matter is contained in the same number of pages.

It was also determined to append to each number of the Journal a regular advertising sheet, wherein book notices, business notices, advertisements of new preparations, apparatus, etc., might be inserted, at the rate of four dollars per page for each issue, As one of the prominent objects of the Journal is the extension of knowledge, and the consequent discouragement of empyricism, advertisements of *quack medicines*, properly so called, are excluded; and to avoid difficulty in this regard, the Editor announced, in October last, that a line of distinction would be drawn between a reservation of the skill and manipulation necessary in preparing a medicine of known composition, and a reservation of the composition of the medicine-and that the Editor would be governed by this rule in excluding objectionable advertisements. This sheet has steadily increased in dimensions, and bids fair, when it becomes more generally known, to prove a source of considerable revenue.

The Committee have yet to regret the deficiency of correspondents from a distance, as well as of contributors here at home, to the pages of the work. The number of observers throughout this country must be very large; yet the strong tendency of apothecaries to pursue pharmacy solely for a livelihood, without any manifestation of interest for its advancement, in a scientific point of view, is the main cause of the apathy exhibited by those who, if disposed, are able to write effectively.

The annexed summary statement of the Treasurer of the Committee will expose the state of the finances.

CHARLES ELLIS,
W. PROCTER, JR.,
R. BRIDGES,
EDW. PARRISH,
A. B. TAYLOR,

March 31st, 1851. *Committee.*

Publishing Committee of Journal of Pharmacy in account with Charles Ellis, Treasurer.

1850.		
3d mo. 25, By balance due at last report, - - -	$ 406	27
" cash received through the year, - - -	947	99
	$1,354	26
To expenses for printing, editing, paper, materials, Com. on Sinking Fund, postage, &c.,	1,025	68
Leaving balance in hands of Treasurer, - -	$328	58

A communication from the Treasurer, respecting the delinquency of members in liquidating their contributions, was submitted, and a committee appointed to consider the subject of arrearages of members, and report at the next meeting. The President appointed Ambrose Smith, Francis Zerman, and Wm. Procter, jr.

The College proceeded to the annual election of officers, and the following gentlemen, having received a majority of votes, were declared duly elected to the respective offices.

President—Daniel B. Smith.
1st Vice-President—Charles Ellis.
2d Vice-President—Samuel F. Troth.
Secretary—Dillwyn Parrish.
Treasurer—Ambrose Smith.
Corresponding Secretary—Joseph C. Turnpenny.

Publishing Committee,

Charles Ellis, Dr. Robert Bridges,
Edward Parrish, Alfred B. Taylor.

Trustees,

Warder Morris, William Procter, jr.,
Prof. Robert Bridges, John H. Ecky,
Edward Parrish, William P. Troth,
Daniel S. Jones, Edmund A. Crenshaw.

Committee on Sinking Fund,

Warder Morris, Samuel F. Troth,
Joseph C. Turnpenny.

Then adjourned.

DILLWYN PARRISH, Secretary

Editorial Department.

ERRATA.—By an accidental omission in copying, overlooked in reading the proof, the sense of the third paragraph from the bottom at page 120, in the number for April, in the Essay on Fluid Extract of Serpentaria, was entirely changed. It should read thus:—"By the exercise of a reasonable amount of care in evaporating, the dissipation of the volatile principle can in great measure be avoided; for a specimen of the extract prepared as above was found to possess *not only the bitterness and acridity of the root itself, but also to a very considerable extent its peculiar aroma. The residue left in the displacement apparatus was found to possess* little or no power of imparting," &c. &c. The words in italics were omitted. At page 119 the author's name should read "John C. Savery," instead of "John B. Savery," as printed. Subscribers will please to make these corrections.

FATAL RESULT OF CARELESSNESS.—Again it has become our duty, however disagreeable, to notice the fatal consequences of a disregard of those nice rules of practice which should govern the physician in prescribing, and the apothecary in fulfilling his written requests. From the *Public Ledger* of June 2d, we learn that Dr. B. McNeal prescribed a mixture of six drachms of castor oil and two drachms of oil wormseed, for a child between four and five years old, to be given in tea-spoonful doses. The prescription was taken to the apothecary store of Mr. Robert Shoemaker, and given in hand to his asistant, David A. Shultz, who, owing to the imperfect manner in which the prescription was written, read it oil of rosemary and oil of wormseed, and so dispensed it. The mixture was given at repeated doses from Wednesday to Friday, at which time, the increased indisposition of the child induced the parents to send for the physician, who, perceiving that something was wrong, on enquiry of the apothecary, learned that his prescription had been misinterpreted. The child died on the ensuing morning from the effects, directly and indirectly, of the stimulating mixture. The following is the verdict of the Coroner's Jury summoned for the occasion:

"That the said Henry J. Rowland came to his death by a seated disease of congestion of the brain, which disease was matured from the disorganization of the stomach, produced by over-doses of wormseed oil, as prescribed by the family physician. The Jury deem it but justice to state, that no blame should be attached to David A. Shultz, in the employment of Robert Shoemaker, Druggist, in causing the death of said child."

From the same source, we are informed that Dr. McNeal wrote for castor oil under the name of "Ol. Resini" but according to Mr. Shoemaker, (*North American*, June 3d,) the "i's" were not dotted, and the "e" looked as much like an "o" as anything else, so as to give the appearance of "Rosmi."

In commenting on this unfortunate occurrence, it is only with a view to guard *future* practice, by a recurrence to *past* experience. The physician was censurable, 1st, for prescribing a substance not used in medicine, viz. (Rosin oil,) and which he did not intend; 2d, he was blamable for writing his prescription so miserably bad, that the apothecary read it a third substance, also not intended. 3d, he may have been wrong in directing twenty-four drops of the oil of wormseed for a dose, to be repeated, but as he intended it to be given with castor oil, the modifying influence of the latter, by diluting it and urging it along the alimentary canal, might have rendered it innocuous, or at least not fatal.

On the other hand, the apothecary was culpable, 1st, in dispensing the prescription, even if it had been plainly written, as understood by him, because he should have known that the oils of rosemary and wormseed have few therapeutic properties in common; that the first is rarely if ever used internally, and the latter, never externally; 2d, admitting they might have been intended together, the dose indicated in the prescription should have deterred him from dispensing it until the physician had been consulted. We cannot better convey our sentiments on this point, frequently before expressed, than by quoting the following paragraph from a lecture published several years ago:

"It should be a constant rule in compounding every prescription, to recur to the questions, *is this as the doctor designed? are the doses within propriety?* or if extraordinary, *does the case demand it?* If the directions for use are appended, a judgment can at once be arrived at; if not, a little tact will gain the necessary data by enquiries of the messenger skillfully propounded; and it is better even to delay the dispensation of the prescription until the physician has been consulted, rather than peril the life of the patient, or the reputation of his medical servitors." (See vol. xix. page 251 of this Journal.)

In this instance, had these rules been observed, the physician would have been spared the mortification arising from exposed ignorance, and the painful reflection that his carelessness has been the primary cause of the death of a fellow-creature; while the apothecary, instead of being accessory in act to the mournful result, would have had the gratifying consciousness of having shielded the physician from censure and the patient from harm.

Much has been written and published in the newspapers about the *necessity* of physicians writing their prescriptions in English, as a remedial policy for these distressing occurrences. Were these *reformers* better informed on the subject, they would withdraw their suggestion as being pregnant with evils far greater than those they propose to remove. For instance, take the root of Hydrastis Canadensis, one physician would direct, "Take of Golden Seal

root," another, "Take of Yellow Root," a third, "Take of Orange root," and a fourth, "Take of Puccoon root," and they would all mean the same thing. Would not the license thus given tend to multiply the difficulty already existing? We think so. We have been a little amused by observing within a few days, an attempt to anglicize a prescription by a physician, who directed, among other things, "Powder of Conium" and "Extract of Hyoscyamus," which are hybrids between pharmaceutical English and botanical Latinized Greek. He should have written, "powder of Hemlock leaves," and "powder of Henbane leaves." Should the advocates for *prescription English* carry the day, and induce our "most potent, grave and reverend seignors" at Harrisburg, to send forth the fiat compelling physicians to murder the king's English, we shall have some rich specimens of nomenclature; and in view of such a state of things, we would advise our good friends Blanchard & Lea, to get out with all expedition, a good dictionary of synonyms.

But in earnest;—let every physician as a matter of duty, possess a copy of the Pharmacopœia, and prescribe according to its simple and beautiful nomenclature, not running after that of the London, or Edinburgh, or Dublin, or any other Pharmacopœia. Let them exercise the same care in writing a prescription involving the life of a fellow creature, that they would in penning and wording a *check* or *note of hand*, involving their own pecuniary interest, and our word for it, accidents of the kind in question would be "few and far between," and apothecaries would be relieved from a load of responsibility not now appreciated by the public.

Inspection of Drugs.—The want of a tariff of standards for the guidance of the Drug Examiners under the Act in reference to adulterated Drugs and Chemicals, has been felt almost from the first application of the law. In many cases no difficulty need arise if the officers have the qualifications necessary for the office, but in others, a difference of opinion may exist which may be sufficient to render the action of the law unequal in its influence on the importer, as it is carried out at one port and another. In framing the Act, it was hardly to be expected that such standards could be given, and it was wiser to try its working, (as has been done,) until experience should point out the deficiencies, and then attempt a remedy.

Some members of the New York College of Pharmacy, became so impressed with the importance of the subject, as to bring it before their Board of Trustees, who appointed a committee to investigate the subject. The result was, that in a matter so generally concerning the profession, they considered that the other Colleges of Pharmacy should take part, and accordingly an invitation was extended to the Colleges at Boston, Philadelphia, Baltimore and Cincinnati, to send delegates to a *Convention* to be held in New York, on the 24th of April, for the purpose of recom-

mending a tariff of standards for the use of Drug Inspectors—which it was proposed to bring before the National Medical Association, to meet on the 6th of May, at Charleston, S. C., that its influence might be brought to bear with Congress.

Owing to the short notice given, the delegates from other Colleges did not arrive to take part in the proceedings, but several of them forwarded communications expressive of their approval of the object in view. The Philadelphia College of Pharmacy appointed a committee who were empowered as delegates, should they be able to get to New York, or if not, to forward such a paper as should express the sense of the College. It was the general opinion of the members present, that the subject merited the serious attention of the College, but that the time (four days) was too short to accomplish anything.

The delegates from the New York College, adopted the following report of their Board of Trustees, and forwarded it by Dr. C. B. Guthrie,* to the meeting of the National Medical Association, at Charleston, S. C., viz:

To the Board of Trustees of the College of Pharmacy of the City of New York.

The Delegates appointed to attend the proposed convention of the several Colleges of Pharmacy, to consider of, and recommend standards for certain Imported Drugs, report: That they have given attention to their duties and have endeavored to arrange the order of their proceedings for bringing the subject under their care before the Convention.

They have, in a general way, and for the purpose of this enquiry, classified the great variety of Imported Drugs and Medicinal Preparations, in the hope of deciding, as nearly as practicable, upon the qualities of genuineness, purity and strength, which they ought to possess to answer the intention of the Law of Congress, and secure to the community reliable medicines in those substances and manufactures which our necessities com-

*Since writing the above, we were a little surprised, in conversation with a member of the Medical Association, which recently met at Charleston, to learn, that Dr. Guthrie went to that body as a *delegate* from the New York College of Pharmacy, knowing as we did, that that body was strictly medical in its constitution. It is to be regretted that our sister Institution should have committed this oversight, as it was the occasion of considerable discussion, resulting in the passage of a resolution expressly declaring the ineligibility of delegates from Colleges of *Pharmacy* and *Dentistry*, for members of the Association.

We are also informed that the communication of the College, instead of coming forward as a distinct proposition from that body to the Association, as it should have done, was incorporated with the Report of the Committee on Adulterated Drugs, &c., which Report was so badly prepared, as to be refused publication in the minutes of the Association, and was laid on the table, carrying with it in its rejection, the important proposition from New York.

pel, or our interest leads us to procure from abroad. The delegates have concluded to propose to the Convention, with the approbation of the Board, that in their judgment,

Leaves, Flowers, Seeds, Berries, Fruits, Herbs, Roots, Woods and Barks should be true, fresh and sound.

Gums, Resins, and Gum Resins, should be free from evident intentional adulteration.

Balsams should be pure.

Chemicals should be pure as practicable, and free from evident adulteration. Iodine should not contain more than three per cent. of impurities.

Medicinal Oils, Fixed and Essential, should be pure.

Aloes should be free from impurities and sophistication.

Elaterium should be pure.

Opium should contain eight per cent. of pure Morphia, and be free from evident sophistications and impurities.

Scammony should contain not less than seventy per cent. of the resin of Scammony.

Pharmaceutical preparations should correspond with the requisitions of the Pharmacopœias by which they profess to be made, and the Pharmacopœia should be stated on the label of each bottle or package.

Extracts and Inspissated juices should be fresh and pure.

The following articles we think should be excluded:

All factitious articles.

Carthagena and Maracaybo Barks, and every article evidently intended for purposes of adulteration or sophistication.

English or Rhapontic Rhubarb.

All damaged Drugs.

Every package should be examined.

It is proposed to present for the consideration of the National Convention, and for the action of Congress, that Drugs and Chemicals which may not come up to the Pharmacopœia Standards, but which may yet be properly and profitably used for manufacturing into regular products of the Pharmacopœia, may be admitted under bond to be so appropriated and manufactured only.

(Signed) GEO. D. COGGESHALL,
JOHN H. CURRIE,
C. B. GUTHRIE.

New York, 22d April, 1851.

By a letter from Dr. Guthrie to one of the committee, we are informed that the proposition was laid on the table, not being considered sufficiently definitive in its details, that the sentiment of the Association was evidently in favor of such a tariff of standards, but they wanted it

to be more fully matured by a Convention of the Colleges of Pharmacy.

In looking over the above report we must confess that we do not think it sufficiently finished for the action of the Medical Association. For instance, it says, "Leaves, flowers, seeds, berries, fruits, herbs, roots, woods and barks, should be *true, fresh* and *sound.*" Now let us apply the recommendations. The *first* we will admit, that drugs should be *true.* The *second* would create not a little difficulty among the inspectors. Fresh Jalap, or Calisaya Bark, or Ipecac, or Nux Vomica, or Quassia, may, or may not be as good as the same drugs that have been years in store, if well kept. In regard to the *third,* a difficulty would arise unless the degree of soundness shall be expressed, for it will be very difficult to find a case of rhubarb, a bale of senna, or a cask of uutmegs, that is absolutely sound; and a rigid inspector might have difficulty in passing such articles, a portion of which are not sufficiently pure, whilst the largest part are. In such a case, should he be required to reject the unsound pieces, amounting to one tenth, or because nine-tenths are good, pass the whole? An other example:—Digitalis leaves of the first year's growth, may be *true, fresh* and *sound,* and yet be very inferior in medicinal power. Belladonna, Henbane or Hemlock leaves, may have these characters, and yet from having been collected too early, be greatly deficient in their active principles. Should not the criterion in these cases be of a chemical nature. For instance, long experience has given the manufacturing chemist such expertness, that with a few precipitate-yielding tests, he can soon arrive at the real value of a lot of bark or opium. Why cannot similar tests be applied to the narcotic leaves, for instance? The precipitate yielded by tannic acids, cautiously added to their concentrated solutions, would probably be found to correspond with the proportion of their active principles.

Again. The Report says, "Elaterium should be pure." How is a drug inspector to know that given specimens are pure? We answer that his judgment should, where the least doubt exists, be founded on the proportion of elatin it will yield. The business of any authority, therefore, who aims at making a standard for Elaterium, should be to ascertain what is the *least* per centage of elatin that this drug should contain to be a reliable therapeutic agent? and so of other drugs capable of the application of the same principle. The question for such authority to decide, is not that drugs *should be true, fresh* and *sound;* all admit that; but what they *must be* to pass the inspection, and to make the law practicable. Positive standards should be given, wherever it is possible, as recommended for opium and scammony in the report, and for the narcotic leaves and elaterium in these remarks. The Inspector need not apply the test in all cases, but in those where the least doubt exists.

Our correspondent, (Mr. Coggeshall,) suggests the propriety of all the

Colleges of Pharmacy deliberately considering the subject, and appointing delegates to a Convention to be held in New York, some time next autumn, so as to prepare to bring the matter before Congress in a well digested form. We approve of this course, and believe that if each College would appoint an efficient committee, and proceed on a generally understood plan, so as to get at the root of the difficulties now experienced, the delegates would have something *real* to act on, and from the joint labors of all the Colleges, would be able to construct a tariff of standards, worthy of American Pharmacy, and fraught with the greatest usefulness to the medical interests of the country.

The Pharmacopœia of the United States of America. By authority of the National Medical Convention, held at Washington, A. D. 1850. Philadelphia: Lippincott, Grambo & Co. 1851. pp. 317, 8vo.

The publication of the Pharmacopœia was announced in the April number of this Journal: we propose now, to give a condensed notice of those portions of the work, which bear the impress of the revisors; and when sufficient time shall have elapsed, to enable pharmaceutists to give the new or modified formulæ an impartial trial, we hope to receive their critical remarks, favorable or otherwise, for our pages.

The List.—A comparison of the Officinal lists of 1840 and 1850, will exhibit, comparatively, few points of difference. *Acetic acid* has been placed there from among the preparations, its sp. grav. reduced to 1.041, and its strength directed to be determined by 100 grains of it, requiring 60 grains of bicarbonate of potassa for saturation. It is therefore eight times the strength of standard distilled vinegar, and is intended to be represented by the Commercial No. 8 acetic acid. *Nitric acid* is required to be of the density 1.42, which indicates an acid of the composition NO^5, 4HO, the most permanent of the nitrates of water. We deem this a great improvement, and one that will enable the apothecary to comply with the letter of the Pharmacopœia, when the strength of this acid is in question, because by boiling a weaker acid it concentrates till it arrives at that strength, by losing more water than acid, and by boiling a stronger acid it is reduced in strength, until it acquires that density, losing more acid than water. *Aconite root, Metallic Arsenic, Cotton, Oil of bitter almonds, and Nitrate of Lead,* have been introduced in reference to certain preparations, while *Althea* and *Arnica flowers, Quince seeds, Extract of* (*Indian*) *Hemp, Frostwort, Burdock, Mace, Cod-liver oil, Eggs, Chlorate of Potassa, Brandy* and *Port Wine,* are brought forward as an extension of the list, for extemporaneous prescriptions. It should also be noted that the word "*Diospyros,*" now means the *unripe fruit of the persimmon,* and not the bark, as in 1840. *Changes in the Officinal names of drugs,* should be made with jealous caution, and nothing but an alteration in the *import* of terms by the progress of science should justify them. The

few innovations of this kind in the new Pharmacopœia, are backed by good reasons, and some names which might have been changed were left as before, rather than risk the disturbance caused in the names of preparations. The *test directions* appended to chemical drugs, have been extended and improved. Apothecaries would do well to *apply* them occasionally, to the articles they purchase. The note to *Chlorinated lime*, points out an easy method of determining its strength, which is required to be 25 per cent. of chlorine as a minimum.

Preparations.—*Aceta.*—Diluted acetic acid is directed in lieu of distilled vinegar, in the *medicated vinegars*, with the option of using the latter when more convenient, and the alcohol previously added, is now omitted as of no use.

Acida.—*Gallic acid* is new—The process by atmospheric action, on moistened powdered nut galls, is adopted. The rejection of the first liquid by expression is an improvement, enabling the operator to avoid the coloring and gummy matters (to a great extent) which tend to embarrass the crystallization of the acid. One very important oversight has been made in this formula, which we desire to direct attention to; it is in using the ordinary instead of the purified animal charcoal. The former nearly always contains so much iron as to form an inky compound with the gallic acid. *Acidum Hydrocyanicum Dilutum*, is now the officinal name for Prussic acid. *Diluted Nitric Acid* is now made with one part by measure of Nitric Acid, 1.42 to six parts of water. Formerly it was one to nine, and as little regard has been heretofore had to the strength of the acid used, there is every probability, that this preparation will be stronger *in practice* than it has previously been, although the same in theory. *Elixir of vitriol* is now made without the useless delay required by the old formula.

Etherea.—*Æther* and *Spiritus Ætheris Compositus*, are the new names for sulphuric ether, and Hoffman's anodyne. *Chloroform* is classed as an ether, and a practical process, based on Soubeiran's, is given for its preparation. *Collodion* is also found with the ethers. We have tried this formula several times, and have never failed in obtaining a soluble gun cotton, and an adhesive solution. In general *three* minutes will be found sufficient for the due impregnation of the cotton, if it is properly brought in contact with the acid mixture.

Aquæ Medicatæ.—*Aqua Amygdalæ Amaræ*, or bitter almond water, is made by dissolving 16 minims, (about 32 drops) of oil of bitter almonds in two pints of water, by the aid of a drachm of carbonate of magnesia. *Apothecaries and druggists should carefully distinguish this preparation from the Bitter Almond Water of the foreign Pharmacopœias*, which is a saturated solution of the oil containing a larger per centage of *prussic acid.* The proportion of carbonate of magnesia in the formulæ for the medicated waters, is very properly increased, promoting more effectually the solution of the oils and camphor in water.

ARGENTUM.—The process for making *Cyanuret of Silver* has been simplified by preparing the hydrocyanic acid, and the cyanuret, both at one operation. *Argenti Nitras* means *crystallized* nitrate of silver. *Argenti Nitras Fusus*, the nitrate *in cylindrical sticks*. The test note to the latter, will enable any apothecary to prove its purity with ease. *Oxide of Silver* is new, and is prepared from the nitrate of silver and solution of potassa. (U. S. P. strength.) An ounce and a half of *white caustic potassa*, dissolved in a pint and a half of water, will afford a substitute for the officinal solution, when it is not at hand.

ARSENICUM.—*Iodide of Arsenic* is new—and a simple and practicable process given for making it. Particular attention should be given to have the metallic arsenic in *a very fine* powder, and equally disseminated through the powdered iodine before applying heat, and the smaller the flask, capable of holding the mixture in its bulb—the better. (*Donovan's*) *Solution of Iodide of Arsenic and Mercury*, is made with ease and dispatch.

CALX.—*Precipitated Carbonate of Lime* has been introduced with the precaution, suggested by Dr. Bridges, to get a fine powder.

CERATA.—*Ceratum Calaminæ* is the new name for cerate of impure carbonate of zinc, and the former name of the latter—*Ceratum Zinci Carbonatis*—is now appropriated to a cerate made, with the precipitated carbonate of zinc. *The Cerate of Spanish Flies* is made rather softer than formerly, by decreasing the proportion of Wax and Resin, and increasing proportionably the Lard.

DECOCTA.—The former ambiguity in reference to *Decoctum Cinchonæ* is now avoided by having separate decoctions of *Yellow* and of *Red Bark*. The boiling process in making *Compound Decoction* of Sarsaparilla, is preceded by 12 hours cold maceration—a decided improvement.

EMPLASTRA.—*Emplastrum Ammoniaci cum Hydrargyro* has been introduced from the London Pharm. In the formula for *Assafetida plaster*, alcohol has been substituted for diluted alcohol, as a solvent for the gum resins, by which the volatile oils and resins, the only parts desirable, are dissolved, and the gummy matters left. *Burgundy Pitch Plaster* is a substitute for the commercial drug which is too friable in cold weather. The proportion of soap has been reduced, and the manipulations improved, in the formula for *Soap Plaster*.

EXTRACTA.—*Extractum Cinchonæ Flavæ*, and *Extractum Cinchonæ Rubræ*, now replace the *Extractum Cinchonæ* of 1840, which was made of any *Peruvian* bark the apothecary might choose, and it is hardly necessary to say, *cheap Pale Bark* was often chosen. *Acetic extract of colchicum* is new—and is an efficient preparation, when made from good root. In making it, glass or porcelain percolators and evaporators should be used, on account of the acid. The formula for *Extractum Conii*, is the most improved pharmacopœial one extant, as also is that of *Extractum Taraxaci*. Aqueous *Extract of Opium*, and hydro-alcoholic *Extract of Rhubarb* will also be noticed among this class of medicines.

EXTRACTA FLUIDA.—This new class of preparations, embraces three distinct kinds, viz: oleo-resins, concentrated syrups, and concentrated tinctures. Two of the first, four of the second, and one of the last are adopted. The *Extractum Piperis Fluidum*, is the officinal substitute for oil of black pepper, from which it differs in containing more volatile oil.

FERRUM.—*Tincture of Chloride of Iron*, is made expeditiously by the aid of heat, and *Citrate of Iron* is introduced. Many prefer the *Ammonio-Citrate*, as being more soluble. For pills or powders, the officinal citrate is to be preferred, and when the form of solution, or syrup is often desirable, it will be found convenient to keep a concentrated solution ($\frac{1}{2}$ oz. per fluid ounce) at hand. *Solution of Iodide of Iron* differs from that of 1840, in the substitution of 12 ounces of sugar, for 5 fluid ounces of Prepared Honey. It is more easily prepared. The *Solution of Nitrate of Iron* is made by the formula of the new Dublin Pharmacopœia, which is nearly that of Mr. Kerr. It is an unsatisfactory preparation, and is not permanent as usually made. The suggestion to add sugar does not prevent its changing after a length of time. Mr. Samuel Simes, Pharmaceutist, of this city, makes a syrup of proto-nitrate of iron, of a light greenish color, and thick consistence, which Dr. Hays and others use with decided advantage in cases where the sesqui-nitrate is indicated. In the *test directions* to the formula, for *Phosphate of Iron*, the word "insoluble" in the last line, should read "soluble." Iron by hydrogen, under the name of *Ferri Pulvis* has been introduced, and a correct process given for its prepartion.

GLYCERINA.—*Glycerin* is directed to be made from the washings of lead plaster. Apothecaries should attend to the appended test directions, and see that its sp. grav. is correct, and that it is free from lead.

INFUSA.—Infusum Diosmæ—now reads, *Infusum Buchu*. Infusum Cinchonæ, has been replaced by separate infusions of *Red* and of *Yellow Bark;* and in compound infusion of bark, the *Red* bark is specified as the kind to be used. *Infusion of Cayenne Pepper* is new. *Infusion of Dandelion* is substituted for the *decoction* very properly. *Infusion of Ginger* is new.

MAGNESIA.—*Solution of Citrate of Magnesia* is among the prepartions. It is one of the most popular and valuable of the new articles.

MELLITA.—The process for preparing *Honey of Roses* has been greatly improved, both as to its color, flavor and consistence.

MISTURA.—*Mistura Glycyrrhizæ Composita* is the officinal name for *Brown Mixture*, so long and favorably known in this city as an expectorant.

OLEA DESTILLATA.—The *Oils of Cloves and Cubebs*, now among the preparations, were formerly in the list. The *Oils of Valerian, Copaiba and Tobacco* are new; the latter is an empyreumatic oil, obtained by distilling dry tobacco in a green glass retort, heated to redness by means of a sand bath.

PILULÆ.—The consistence of the *Pills of Carbonate of Iron* has been improved by substituting a portion of sugar for honey, and the manipulation altered so as to be more correct and explicit. *Pills of Iodide of Iron* are new. They should only be made extemporaneously. The consistence of *Pills of Sulphate of Quinia* is improved by the use of honey.

PLUMBUM.—*Iodide of Lead* is introduced, and the nitrate is employed as its source, which is greatly preferable to the acetate, because the acetate of potassa resulting, when the latter is used, acts as a solvent for the iodide and causes waste.

POTASSA.—*Pure Carbonate of Potassa* is made by heating the bicarbonate to redness, lixiviating and evaporating to dryness. *Citrate of Potassa* at last is a recognized preparation, and is made from the bicarbonate of potassa and citric acid. By employing the latter salt, the silica of the carbonate is avoided. In the note to the formula for *Liquor Potassæ Citratis*, or neutral mixture, it is stated that that preparation may be made from citrate of potassa and water, but it thus contains no carbonic acid, which is considered a desirable ingredient. This may be remedied by dissolving the citrate in carbonic acid water. *Cyanuret of Potassium* is now made by Liebig's formula, which yields it sufficiently pure for medical use and is a more manageable process. *Iodide of Potassium* is directed to be made by saturating a solution of potassa with iodine, evaporating to dryness, and heating the residue to redness, mixed with charcoal powder. The residue is lixiviated, and yields by evaporation a pure-white salt.

SPIRITUS.—In *Compound Spirit of Juniper*, *Spirit of Pimento*, and *Spirit of Rosemary*, the volatile oils are merely dissolved in the alcohol without distillation.

SYRUPUS.—*Syrup of Gum Arabic*, we are glad to see, has found a place, after being omitted in the edition of 1840. The gum is directed unpowdered, to enable the apothecary to select it. *Syrup of Citric Acid* is a substitute for syrup of lemons, than which it is much less acid. *Syrup of Garlic* is now made without heat, and a specified quantity of the acetic liquor is directed. There are two formulæ for *Syrup of Rhatany:*—In one the solution of extractive matter is obtained by direct solution from the root; in the other, the extract is dissolved in water and filtered. As only the best root will yield two ounces of extract to the pound, it follows that the syrup made directly from the root is liable to vary in strength. It is better therefore to employ the extract when it is of aqueous origin. The formulæ for *Syrups of Rhubarb*, *Ipecac.*, *Seneka*, *Tolu* and *Ginger*, have been modified advantageously. *Wild Cherry Syrup* is new in the work. The first 500 copies of the Pharmacopœia that were issued contained an error in the second formula for Compound Syrup of Sarsaparilla, the words *two pints* being used instead of *ten pints*. In the remainder of the issue the leaf was reprinted correct. Those whose copies contain the error should correct it with the pen.

TINCTURA.—*Tincture of Aconite Root* has been made weaker than Fleming's, being twelve ounces to two pints. It requires careful manipulation to exhaust the root with the small proportion of menstruum, and we have found digestion at 150° in a corked bottle to aid very much. *Tincture of Peruvian Bark* is made from *Yellow Bark*. The *Compound Tincture* from *Red bark*. *Tincture of Jalap* is weaker in theory, but of the same strength in reality. If *Tincture of Nux Vomica* is made by displacement, the nux vomica should be in fine powder. The formula for *Tinctura Saponis Camphorata* has been improved by the addition of water.

Trochisci.—Lozenges of *Bicarbonate of Soda* have been introduced.

Unguenta.—The manipulation in the process for *Citrine ointment* has been modified for the better. *Stramonium ointment* is now made from the *extract*. In making *Iodine ointment*, a little iodide of potassium is directed, which enables the apothecary to dispense it of a perfectly uniform consistence, without the presence of particles of undissolved iodine.

Zincum.—The direction for purifying acetate of zinc has been improved by substituting the moist carbonate of zinc for chlorinated lime. And a formula has been given for *Precipitated Carbonate of Zinc*, which preparation is used in making the oxide of zinc, and as a substitute for calamine.

Whatever may be the opinions of pharmaceutists regarding particular items, we believe all will agree that as a whole the work embodies a fair representation of the more important improvements in Pharmacy as it now exists. We cannot leave the subject without recording our opinion in favor of a *cheap duodecimo* edition of the Pharmacopœia, so that *every* apothecary, physician and medical student, can have a copy, and become familiar with the work. A large majority of physicians and apothecaries in this country know nothing of our Pharmacopœia except as they learn it through the dispensatories, where it is so mixed up with the British Pharmacopœias as to frequently confuse both physician and apothecary; and whilst we unhesitatingly express the opinion that the United States Dispensatory is the most practically useful work of the kind in the English language, we would be glad to see our National Pharmacopœia published with a special commentary, explanatory of hundreds of points of interest, which, owing to the dogmatical form of such works, are left unexplained.

The Physician's Prescription Book: containing a list of terms, phrases, contractions, and abbreviations used in prescriptions, with explanatory notes; also the grammatical construction of prescriptions, etc. etc. To which is added a key containing the prescriptions in an unabbreviated form, with a literal translation intended for the use of medical and pharmaceutical students. First American, from the tenth London Edition. Philadelphia, Lindsay & Blakiston. 1851. pp. 288. Duodecimo.

We are glad to see this little volume. Although intended chiefly for the medical practitioner and student, it will be found oftentimes exceedingly convenient and useful by the apothecary. A large majority of the apothecaries of this country have but a slight acquaintance with the Latin language, and those who have acquired some familiarity with it, as taught in school, are at fault among the terms and abbreviations peculiar to medicine. Most American physicians have abandoned the habit of clothing their prescriptions in a Latin garb, except so far as the Materia Medica is concerned, and were it not for a few, whose love of the ancients induces them to affect a classical medium of communication with the apothecary, together with those foreign physicians who have settled among us, and whose common habit has been to use the Latin tongue, we might almost

say that the *necessity* of a knowledge of the language by the American apothecary had ceased to exist.

The chapter on abbreviations is well worthy the attention of both physicians and apothecaries, and those chapters applying the rules of syntax to prescription writing, and giving rules for the pronounciation of scientific terms, are equally so. The second part of the work consists of a series of abbreviated Latin prescriptions, followed by the same written in full with their literal translation; from the recent newspaper developments, some of our practitioners would find a careful study of this portion of the book, a useful preliminary preparation to appearing before coroners' juries. There are other points of interest and usefulness in the book, which, in connection with what have been noticed, claim for it a place in the library of every pharmaceutical student.

New Remedies: with formulæ for their administration. By ROBLEY DUNGLISON, M. D., *Professor of the Institutes of Medicine, etc.* Sixth edition, with extensive additions. Philadelphia, Blanchard & Lea. 1851.—pp. 755.

No more certain evidence need be asked in favor of the encouragement received by the publishers of Medical literature in the United States, than the rapid succession in which editions of standard works are called for. The work before us has passed through six editions, and its size has been much augmented. The object of the work appears to be to gather into an alphabetically arranged collection, the pharmaceutical and therapeutical discoveries and improvements that are first presented in the Journals of the day, so that the student, who rarely has more than a limited access to these, may see what has been brought forth by the most recent experimenters and discoverers in all parts of the world. The great learning of the author, and his remarkable industry in pushing his researches into every source whence information is derivable, has enabled him to throw together an extensive mass of facts and statements, accompanied by full references to authorities; which last feature renders the work practically valuable to investigators who desire to examine the original papers. The intention of the author appears to be, to present to the fullest extent the latest researches of others, without any attempt to question, modify, or improve, their results and statements, resting them solely on their own merits. By so doing, he has saved himself a world of trouble, and has left the field open to all enquirers who may be disposed to call in question any of the facts, etc., set forth in his pages.

The author observes in the preface, "The Therapeutical agents now first admitted in this work, some of which have been newly introduced into pharmacology, and the old agents brought prominently foward with novel applications, and which may consequently be regarded as *New Remedies*, are the following: Adansonia Digitata, Benzoate of Ammonia, Valerianate of Bismuth, Sulphate of Cadmium, Chloroform, Collodion, Canthari-

dal Collodion, Cotyledon Umbilicus, Sulphuric Ether, Strong Chloric Ether, Compound Ether, Hura Braziliensis, Iberis Amara, Iodic Acid, Iodide of Chloride of Mercury, Powdered Iron, Citrate of Magnetic Oxide of Iron, Citrate of Iron and Magnesia, Sulphate of Iron and Alumina, Tannate of Iron, Valerianate of Iron, Nitrate of Lead, Lemon Juice, Citrate of Magnesia, Salts of Manganese, Oleum Cadinum, Arsenite of Quinia, Hydriodate of Iron and Quinia, Sanicula Marilandica, and Sambul." The following items are quoted from the newer portions of the work.

"*Bismuthi Valerianas* is formed by mixing a neutral solution of Nitrate of Bismuth with Valerianate of Soda, [also in solution] washing the precipitate with water, and drying with a gentle heat. It forms a white powder which is insoluble in water; and has been recommended by Righini in gastrodynia, chronic gastralgia, and especially in neuralgia and nervous palpitation.

The dose is from half a grain to two grains, three or four times a day, in the form of powder or pill.

"*Ferri et Alumina Sulphas*, Sulphate of Iron and Alumina. This salt has been introduced, by Sir James Murray, of Dublin, as a valuable addition to the class of astringent remedies. The *bisulphate of iron and alumina*—as he terms it—is readily made by treating *bicarbonated solution of soft iron* (*!*) and *carbonated solution of pure washed alumina* (*!*) with *sulphuric acid*, after separating the arsenic and other ingredients which are too often found in the vitriolic acid of commerce."

One cannot but *admire* the *very lucid* language in which Sir James has couched his communication for the public benefit. It savors strongly of a quackish spirit, and possibly it will only be found that the preparation of Sir James possesses the marked curative powers attributed to the salt by him in chronic diarrhœa, dysentery, cholera morbus, leucorrhœa, epistaxis, etc. etc. When men pretend to make known remedies, they should do it in the clearest expressions they are capable of using: the days of alchemical mystifications have passed away.

We perceive among the "new remedies" Leucolein, an artifical alkaloid obtained from coal tar, and which has been shown to be identical with the Cincholeina or Quinoleina obtained from the alkaloids of cinchona by distilling them with potassa. It is a colorless substance, having an oleaginous consistence, sp. gr. 1.081, is slightly soluble in water, and miscible in all proportions with alcohol ether and the essential oils. Wertheim prescribed it as a sulphate. Its most evident effect is on the pulse, which it depresses, like conia, but under different circumstances. Its therapeutical powers have not been much investigated.

Reasoning from what is already known of chemical remedies, the numerous new substances brought to light almost daily by the researches of chemists, will afford a wide field for the occupation of the experimental therapeutist. Personally we have no objection to the multiplication of new remedies, because, although they often give the apothecary trouble, and cause out-

lays never redeemed, they are also sources of scientific and pecuniary interest to him; but we cannot but view that "longing after something new," which induces some practitioners to neglect standard and well understood agents, as one of the evidences of the uncertainty of Medicine.

THE CAVENDISH SOCIETY.—Perhaps many of our readers are not aware of the existence of this Society, much less of the advantages from membership in it. It is one of a number of associations that have sprung into existence within a few years past, in England with the object of promoting the circulation of scientific literature. The design of the CAVENDISH SOCIETY, bearing as it does the name of an eminent chemist of the last century, has more specially a chemical direction. The following extracts from the laws of the Society will afford an explanation of its intentions.

"I. The Cavendish Society is instituted for the promotion of Chemistry and its allied Sciences, by the diffusion of the literature of these subjects.

"II. The Object of the Society will be effected by the translation of recent works and papers of merit; by the publication of valuable original works which would not otherwise be printed from the slender chance of their meeting a remunerating sale; and by the occasional republication, or translation, of such ancient or earlier modern works as may be considered interesting or useful to the Members of the Society.

"III. The Society shall consist of an unlimited number of members.

"IV. The subscription constituting a Member shall be one guinea; to be paid in advance on the 1st day of January in each year; for which he shall be entitled to a copy of every work published by the Society for the year for which he subscribes.

"V. The Officers of the Society shall be elected from the Members; and shall consist of a President, twelve Vice Presidents, Treasurer, Secretary, and a Council of sixteen. The power of framing by-laws, and of directing the affairs of the Society, shall be vested in the Council.

"XVI. The Council shall select the works to be published by the Society, and shall make all arrangements, pecuniary or otherwise, in regard to editing, translating, preparing works for the press, printing, &c.

"XXI. Members shall have the privilege of proposing works for publication, and shall address their propositions to the Council.

"XXIII. No Member shall be entitled to receive the Society's publications unless his annual subscription shall have been duly paid.

"XXIV. The works of the Society shall be handsomely printed on an uniform plan for Members only."

At the annual meeting of the Cavendish Society held in London, on the 1st of March last, the following officers were elected, viz:

President—Professor Graham, F. R. S.

Vice Presidents—Arthur Aikin, F. G. S., Professor Brande, F. R. S., Earl of Burlington, F. R. S., Sir James Clark, M. D., F. R. S., Professor T. Clark, M. D., Walter Crum, F .R. S., Michael Faraday, D. C. L., F. R. S.,

J. P. Gassiot, F. R. S., Sir Robert Kane, M. D., F. R. S., W. A. Miller, M. D., F. R. S., Richard Phillips, F. R. S., Professor Wheatston, F. R. S.

Council—Jacob Bell, M. P., F. L. S., Warren de la Rue, F. R. S., Golding Bird, M. D., F. R. S., W. Ferguson, F. C. S., J. J. Griffin, F. C. S., A. W. Hoffman, Ph. D., F. C. S., G. D. Longstaff, M. D., F. C. S., T. N. R. Morson, F. L. S., Jonathan Pereira, M. D., F. R. S., R. Porrett, F. R. S., R. H. Semple, M. D., W. Sharpey, M. D., F. R. S., Alfred S. Taylor, M. D., F. R. S., Charles Tomlinson, Esq., Robert Warrington, F. C. S., A. W. Williamson, Ph. D., F. C. S.

Treasurer—Henry Beaumont Leeson, M. D., F. R. S.

Secretary—Theophilus Redwood, Esq.

The works heretofore issued by the Society are as follows:

For 1848.—1. Chemical Reports and Memoirs. Edited by Thomas Graham, F. R. S. (out of print.)

2. Hand-book of Chemistry. By Leopold Gmelin, translated by Henry Watts, B. A., F. C. S. Vol. I.

For 1849.—3. Hand-book of Chemistry. By Leopold Gmelin. Vol. II.

4. " " Vol. III.

5. The Life and works of Cavendish, by Dr. George Wilson.

For 1850.—6. Hand-book of Chemistry. Vol. IV.

7. " " Vol. V.

The works under way for 1851, are Lehmann's Physiological Chemistry, translated by Dr. Day; and the 6th volume of the Hand-book, which will complete the inorganic part of this work.

The accession of members has not been as rapid as might have been anticipated from the object in view, but their number has been steadily increasing, and at present amounts to 854. As the extent of the operations of the Society is limited only by the amount of subscriptions, the individual advantages to the members is in direct proportion to their number. For instance: the cost of translating, editing, and setting in type any work is the same for 1000 copies, as for 5000. The only additional charge for the extra 4000 copies, would be the paper and press work. Consequently 5000 members could be supplied with copies for a small advance on the expense required for supplying 1000 members, and the surplus funds yielded by the greater number of subscriptions, would enable the Society to prepare and publish several other works, all of which would be furnished to the members without additional cost. Hence it is of the utmost importance to increase the list, and with this view the Council have appointed Honorary Secretaries throughout the provincial towns of Great Britain and Ireland, who interest themselves in the Society's behalf by extending a knowledge of its object and usefulness. Already there are several members in this country. At a late meeting last year, the Council determined to facilitate the acquision of American Members by creating an Honorary Secretaryship in the United States, and have since appointed the Editor of this Journal, with his previous consent, to fill the Secretaryship for Philadelphia; from whom, further information, interesting to those who desire to avail themselves of the advantages of the Society, may be obtained.

LECTURES IN THE

PHILADELPHIA COLLEGE OF PHARMACY.

Thirty-first Session of the School of Pharmacy, 1851-52.

The Lectures in this institution will commence on Thursday, October 16th, and terminate about the middle of March. They will be held in the Hall of the College, Zane street, on Tuesdays, Thursdays, and Saturdays, two lectures each evening at 7 and 8 o'clock.

ROBERT BRIDGES, M. D., General Chemistry.

WILLIAM PROCTER, Jr., Theoretical and Practical Pharmacy.

ROBERT P. THOMAS, M. D., Materia Medica.

The lectures on CHEMISTRY will embrace in a systematic view the laws, operations and results of this science, and its relations to Pharmacy. The elements concerned in inorganic nature, and their compounds, will receive such notice as their relative importance in this respect demands; and will be illustrated by experiment, diagram, specimens, and processes.

Organic chemistry will also receive its full share of attention, and all its compounds, possessing general or pharmaceutical interest will be brought under consideration in a similar manner.

The lectures on PHARMACY will treat, of the elementary operations required in the preparation of medicines; viz., weights, measures, and specific gravity, the management of heat, the manipulations in the processes of pulverization, solution, evaporation, distillation, crystallization, &c.; all illustrated by the most approved models, diagrams and apparatus.

The pharmaceutical preparations of organic drugs will be considered as follows; viz. The simple preparations of each drug will be noticed under the head of that drug, and each compound preparation under the head of its chief constituent. Each class of preparations as tinctures, extracts, plasters, &c., will receive a general notice in its proper place. The classification of the subjects will be in groups founded on the nature of their chief constituents; these may be starch, gum, sugar, resin, volatile oil, fixed oil, tannin, alkaloids, etc., each group being prefaced by a general description of the principle or principles giving it name. The preparations of each drug will be preceded by such notice of its chemical constitution, as will exhibit the kinds of treatment best calculated to extract and preserve its active portion.

The course will conclude with the processes for those inorganic chemicals which may be prepared by the apothecary himself, when desirable, without any reference to their systematic chemical relations.

The lectures on MATERIA MEDICA will be exclusively devoted to vegetable and animal substances, their origin, commercial history, characters, composition, and medical properties, together with their adulterations and the means of detection. The course will be commenced with three lectures on the elements of botany, and will be made practical and demonstrative by the exhibition of an extensive collection of the substances, their varieties and falsifications, aided by accurate drawings, and a full series of exotic and indigenous plants in their dried state.

Experiments illustrative of the proximate organic principles and modes of their detection, with the difference between genuine and spurious articles, will be introduced whenever deemed interesting or important.

QUALIFICATIONS FOR GRADUATION.—Every person upon whom a diploma of this college shall be conferred, must be of good moral character, must have arrived at the age of twenty-one years, have attended two courses of each of the lectures delivered in the college, or one course in the college,

and one course in some other respectable school of pharmacy, and have served out an apprenticeship of at least four years, with a person or persons qualified to conduct the Drug and Apothecary business; of which circumstance he must produce sufficient evidence to the Board of Examiners.

He shall also be required to produce an original dissertation, or thesis, upon some subject of the materia medica, pharmacy, chemistry, or one of the branches of science immediately connected therewith, which shall be written with neatness and accuracy, and with the evidence of apprenticeship, be deposited with the senior professor of the school, on or before the twentieth of February, of the session in which the application shall be made. He must also be recommended in writing by the Committee of Examination and the Professors jointly, and if his application be finally approved of by the Board of Trustees, he shall, upon payment of five dollars to the treasurer, receive the diploma of the college.

Fees.—The matriculation fee is *two* dollars, payable to the Secretary of the Board of Trustees, and the price of tickets is *eight* dollars for each course, payable to the professors respectively. The fee for the Diploma is *five* dollars. Students who have previously matriculated, and all who are apprenticed to members of the college, are exempt from the matriculation fee, but they must invariably obtain the matriculation ticket before the commencement of each course. Graduates and members of the college, and all students who have paid for two full courses of instruction in the college, are admitted to the lectures gratuitously.

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